JANUARY 25, 1960

PAPER TRADE JOURNAL

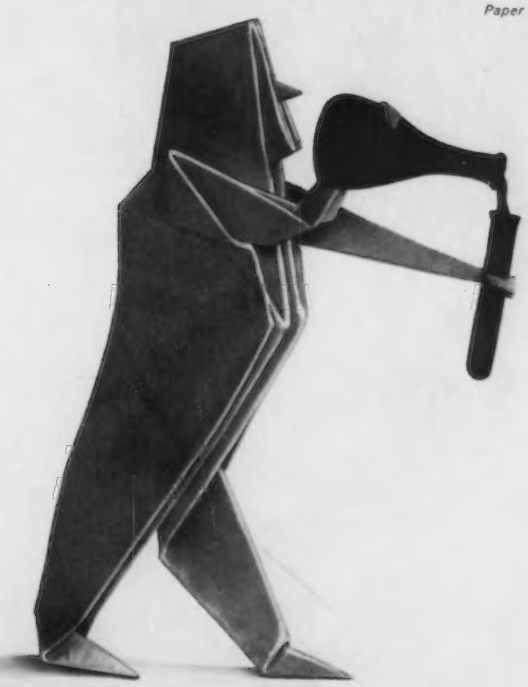
How to Chop Maintenance Costs In Groundwood Rejects Refining

Specialty Bags Require Special Adhesives at Arkell & Smiths

Who, What Was Responsible for That Last Crankshaft Failure?

Company Public Relations, How Are They? Checklist Your Rating

Paper sculpture by Giuseppe Baggi



Pulp from Gottesman means...

TECHNICAL SERVICE!

Bleached and Unbleached Sulphite • Bleached Hardwood • Groundwood
Bleached, Semi-Bleached, and Unbleached Kraft

Established 1886

THE GOTTESMAN ORGANIZATION

Gottesman & Company, Inc. • Central National Corporation
Central National Commercial Company, Inc.
100 Park Avenue, New York 17, N. Y.

PULP PAPER EXPORT — WOOD PULP

Gottesman & Company Aktiebolag, Stockholm, Sweden • Central National-Gottesman Limited, London, England • Representatives in 55 Leading World Markets

Editorial Dept.
University Microfilms, Inc.
313 N. First St.
Ann Arbor, Mich.

ASTEN

...the first name in dryer felts

...all types for all purposes

ASBESTOS
SYNBEST®
SYNCOT®
SYNTHETIC

FREE—
New 28-page booklet on Dryer Felt Seams.
Write for your copy today.

ASTEN-HILL MFG. CO.
Philadelphia 29, Pa.
Walterboro, S.C.
Salem, Ore.

ASTEN-HILL LIMITED
Valleyfield, Quebec

BLANCOPHOR®

can make your white papers as bright as this sheet

Blancophor HS and ES optical brighteners in your white papers create a remarkably blue-white, fluorescent finish that adds visibly to the sales appeal of your sheet. The Blancophor brighteners, in liquid or powder form, can be added either *as is* to the pulp, or in solution to the surface. Newly-developed Blancophor ES brands are particularly recommended for beater use at low pH (below 5.0 at the wire), because they are more stable. Use of Solar® tinting colors in the brightened pulp will provide a range of hues extending from greenish-blue to reddish-violet, thus making available a variety of brilliant white tints.

NOTE: This sheet has been whitened with Blancophor ES-73.

Ask for samples and complete technical information at any Antara office.

gaf gde ANTARA

From Research to Reality

GENERAL DYESTUFF COMPANY • ANTARA CHEMICALS

SALES DIVISIONS OF GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, N. Y.

SALES OFFICES: New York • Providence • Philadelphia • Charlotte • Chattanooga • Chicago
Portland, Ore. • San Francisco • Los Angeles. IN CANADA: Chemical Developments of Canada, Ltd., Montreal

Blancophor brighteners and Solar Colors, manufactured by General Aniline & Film Corporation, are sold outside the United States under the trade name of "Tintofen" by distributors all over the world.

Clark-Aiken EQUIPMENT

trims costs and paces production at

Clark-Aiken Roll Stand, Type D Cutter
and Overhanging Piler boosts production while
lowering operating costs at The Seaboard Division of
United States Envelope Company, Metuchen, New Jersey.
Cutter and Piler handle sheets up to 64 inches wide.

CLARK-AIKEN EQUIPMENT - GEARED TO MODERN FINISHING ROOM REQUIREMENTS FOR FAST, PRACTICAL AUTOMATION THAT MEANS GREATER ACCURACY, BETTER QUALITY AND HIGHER PROFITS...

It's axiomatic in industry that profits depend on production. This axiom takes on even greater significance in the modern finishing room where the key to top production lies in the new concept of practical automation—engineered by Clark-Aiken to fit your specific needs. Progressive management turns more and more to the trained experts at Clark-Aiken for the solution to production problems.

An acknowledged leader in the manufacture of paper mill machinery for more than a century, Clark-Aiken now shows the way in the development of automated, custom-built machinery for greater accuracy, faster, more efficient materials handling and increased production.

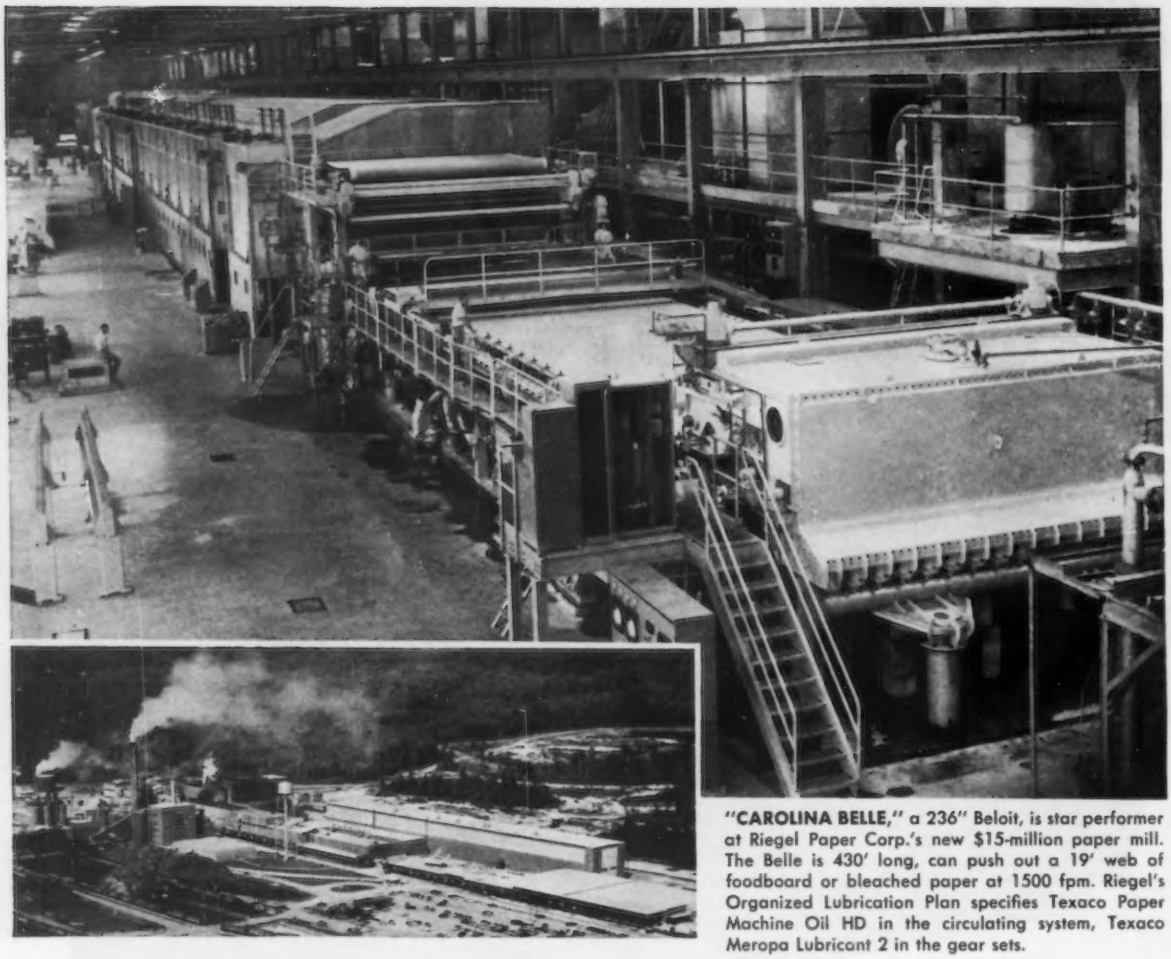
You can realize the benefits of automation in your own finishing room by consulting Clark-Aiken engineers. A concentrated study of your operations and shop conditions assures you of qualified recommendations for an integrated system of automation that fits **your** particular requirements.

Whatever your finishing room production problem —consult Clark-Aiken for qualified and interested attention.

THE *Clark-Aiken* COMPANY

956 SPRINGFIELD ROAD

LEE, MASSACHUSETTS



"CAROLINA BELLE," a 236" Beloit, is star performer at Riegel Paper Corp.'s new $15-million paper mill. The Belle is 430' long, can push out a 19' web of foodboard or bleached paper at 1500 fpm. Riegel's Organized Lubrication Plan specifies Texaco Paper Machine Oil HD in the circulating system, Texaco Meropa Lubricant 2 in the gear sets.

Riegel specifies Texaco Organized Lubrication for new Carolina paper mill

Only 7 types of lubricants handle over 150 applications in ultramodern mill featuring on-machine coating

Riegel Paper Corporation's new $15,000,000 North Carolina paper mill is a prime example of advanced papermaking methods and equipment. "Air-knife" on-machine coating, extra-long drying runs, automatic streamflow recorders, and many other ultramodern features all contribute to papermaking efficiency—*and add up to 150 different lubricant* applications. Nevertheless, a Texaco Organized Lubrication Plan does the whole job with only 7 different types of Texaco lubricants!

Like Riegel, more and more paper mills are installing Texaco Organized Lubrication Plans—and for one very sound reason: this modern approach assures the most thorough protection with the fewest possible lubricants. The primary object of the Plan they prepare for you is to reduce your costs of production and maintenance.

The result: completely dependable lubrication plus all the advantages of low inventory; simplified application procedures; easier handling and storage; less paperwork in ordering.

A Texaco Lubrication Engineer will be glad to help you establish the right Plan for your own mill. For more information, just call the nearest of the more than 2,300 Texaco Distributing Plants, or write:

Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.-NBC-TV

TEXACO

Throughout the United States
Canada • Latin America • West Africa

PAPER TRADE JOURNAL

PUBLISHED WEEKLY SINCE 1872

JOHN C. W. EVANS
Editor

PAUL D. VAN DERVEER
Associate Editor

R. E. THUEMMES
Associate Editor

HARRY L. DYER
Assistant Editor

K. E. PATTERSON
Assistant Editor

L. HAMEL
Production Editor

W. M. PERRY
Staff Artist

LOCKWOOD TRADE JOURNAL CO., INC.
49 West 45th Street, New York 36.
Plaza 7-2370

GEORGE E. LOCKWOOD.....President and Treasurer
ARTHUR E. GORDON.....Vice President
FREDERICK E. WINKLER.....Secretary

Published by Lockwood Trade Journal Co., Inc., at 34 North Crystal St., East Stroudsburg, Pa. Second class postage paid at East Stroudsburg, Pa. Printed in U.S.A.

Copyright 1959 by Lockwood Trade Journal Co., Inc.

Paper established Feb. 17, 1899, combined with Paper Trade Journal Nov. 16, 1899. Paper established Sept. 21, 1910, combined with Paper Trade Journal February 19, 1926.

All rights to the above titles reserved.

Also publishers of Lockwood's Annual Directory of the Paper and Allied Trades.

Week of JANUARY 25, 1960—Vol. 144, No. 4

TRENDS 11

NEWS OF THE WEEK 13

FEATURE ARTICLES

Why Crankshafts Fail 22

Cutting Maintenance Costs in the Refining of Groundwood Rejects 24

How Are Your Public Relations? 28

It's Simple to Make Special Adhesives for Special Bags 30

PAPER PEOPLE 15

OBITUARIES 18

NEWS OF CONVERTERS 19

PRICES OF FIBERS 34

NEWS OF SUPPLIERS .. 36

NEW EQUIPMENT & SUPPLIES 40

FIGURES OF THE WEEK 46

CLASSIFIED ADVERTISING 49

ADVERTISERS INDEX .. 54

REMEMBER THESE DATES

February 22-25. Paper Week in New York.

May 23-25. TAPPI Coating Conference, Edgewater Beach Hotel, Chicago, Ill.

June 14-16. TAPPI Bleaching Conference, Edgewater Beach Hotel, Chicago, Ill.

June 7-9. PIMA National Meeting, St. Francis Hotel, San Francisco, Calif

SUBSCRIPTIONS →

Paper & Pulp Mills, Converters and their Personnel	1 yr.	2 yrs.	3 yrs.
United States and Canada ...	$5.00	$8.00	$10.00
Latin American Countries	15.00	25.00	30.00
All Other Countries	20.00	30.00	40.00

All companies or individuals not engaged in the manufacture of paper and pulp, or in the converting thereof; U.S.A. and Canadian price per year: $7.50

Single copy price of current issues:
North America 50c Foreign $1.00

R. E. BOETSCH Director of Circulation

PAPER TRADE JOURNAL—49 W. 45th St., N.Y. 36, N.Y.
Please enter a subscription with the mailing address as follows:
Name .....
Address .....
City..... Zone.... State .....
If subscription is for an individual, please fill in:
Employer..... City..... State...
Position..... Employer's Business....
Amount $ ..... ☐ Bill Me ☐ Bill Company ☐ Check Attached

Honeywell gives you the most for your instrumentation dollar. . . .

BECAUSE YOUR COMPLETE MILL INSTRUMENTATION CAN BE INSTALLED BY THOSE WHO KNOW IT BEST

1. No "Will it work?" Worries. We custom design control systems for a single process or for your entire mill. This means instrumentation that is matched to your processes and will do the job you want it to do.

2. No Pre-Installation Problems. We carefully co-ordinate materials and labor; ship panels prewired and piped, ready to install. No need to recruit, relocate, or reassign personnel.

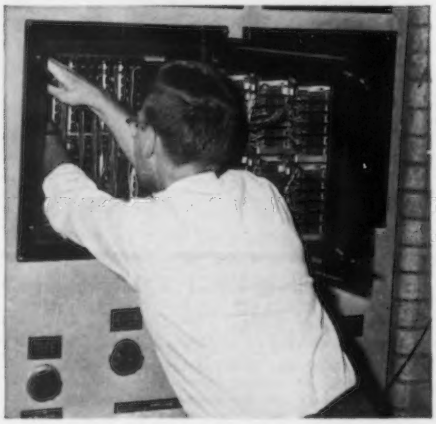
3. No Installation Headaches. We will contract to completely install instrumentation. Honeywell technicians will perform the prestart-up check out and deliver an operating control system to you. You get installation plus peak performance from your control system in the least possible time.

Honeywell offers you far more than just instruments. You can get all or any part of these time and money-savers. Add to these services our many years of engineering and application know-how. You'll see why Honeywell is your best buy in pulp and paper instrumentation, whether you deal directly with us or through your consultant or contractor.

Honeywell

First in Control

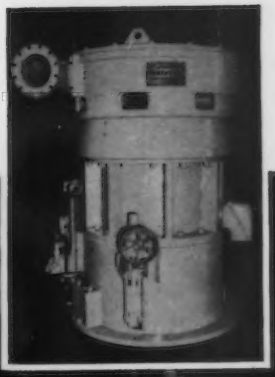
SINCE 1885

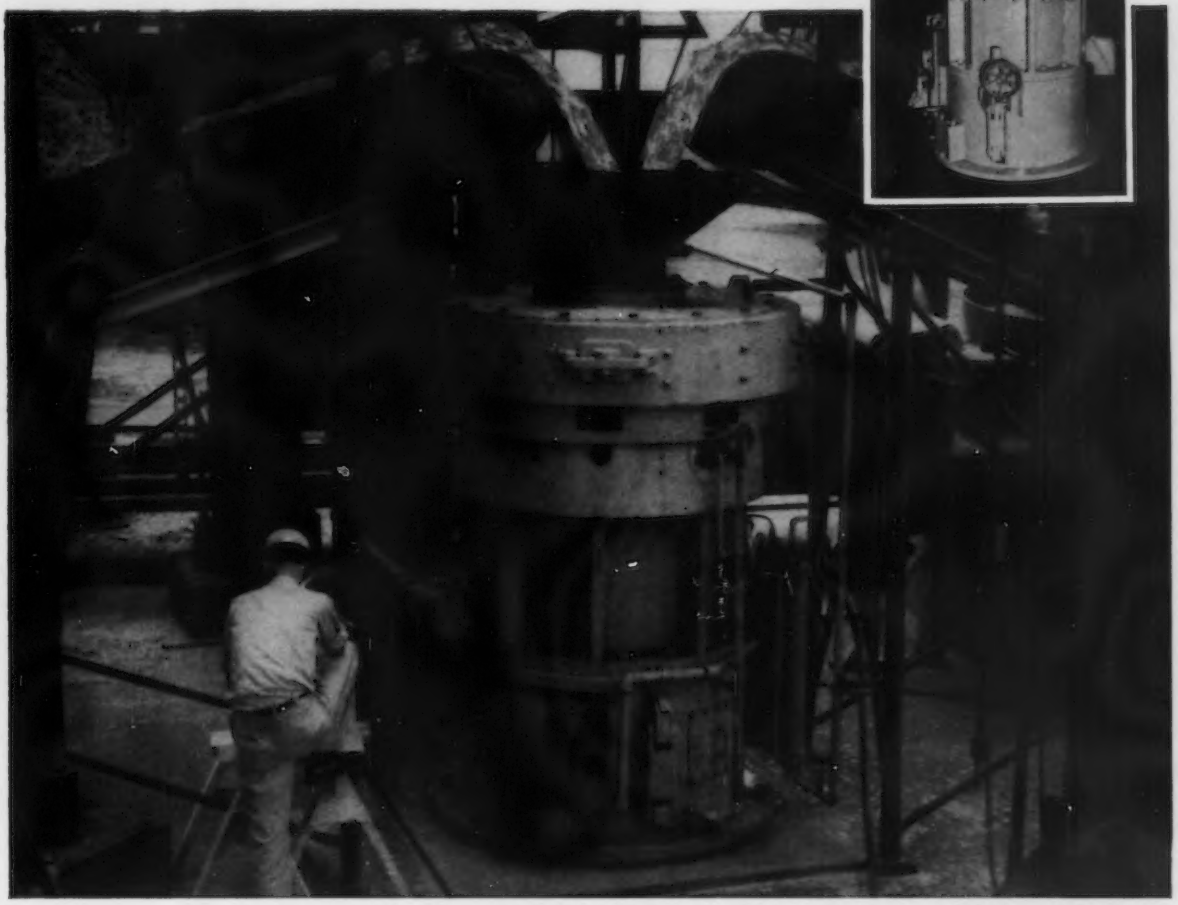


4. No Unscheduled Downtime. We can provide periodic maintenance by experienced service engineers—a big help in eliminating unscheduled downtime. Your instrument technicians are welcome at our Instrumentation Education Center in Philadelphia, where they receive free, expert training in the operation and maintenance of our products.

For primary refining at low power...

New Jones Vertiflex





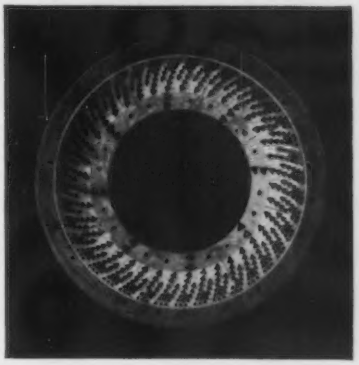
Vertiflex requires minimum floor space. Available in two disc sizes — 48" (shown here) and 34".

Typical application..... Chip Shredding

High quality pulp with extremely low waste and fibre damage, substantial savings in alkali used, increased yield, decreased screen rejects and lower recovery system loading — those are the results from this efficient Jones Vertiflex chip shredding installation. And energy required to process more than 2000 B.D. tons per day is just over ¼ HP days per ton!

Full size chips are fed to the Vertiflex by belt conveyors from two chip silos. Resulting "shreds" are as long as the original chips, but greatly reduced in cross section.

Other applications on which the Jones Vertiflex will perform with outstanding efficiency include cold caustic chips, high yield pulps, bagasse, high density bleaching and denoodling. For full details write to E. D. Jones Corporation, Pittsfield, Mass.



Teeth in vertically mounted rotating disc inter-mesh with teeth in opposing stationary plate mounted in Vertiflex cover. Clearance is easily adjustable and disc life is high since there is never any metal-to-metal contact. Teeth shape and arrangements are varied to fit the application.

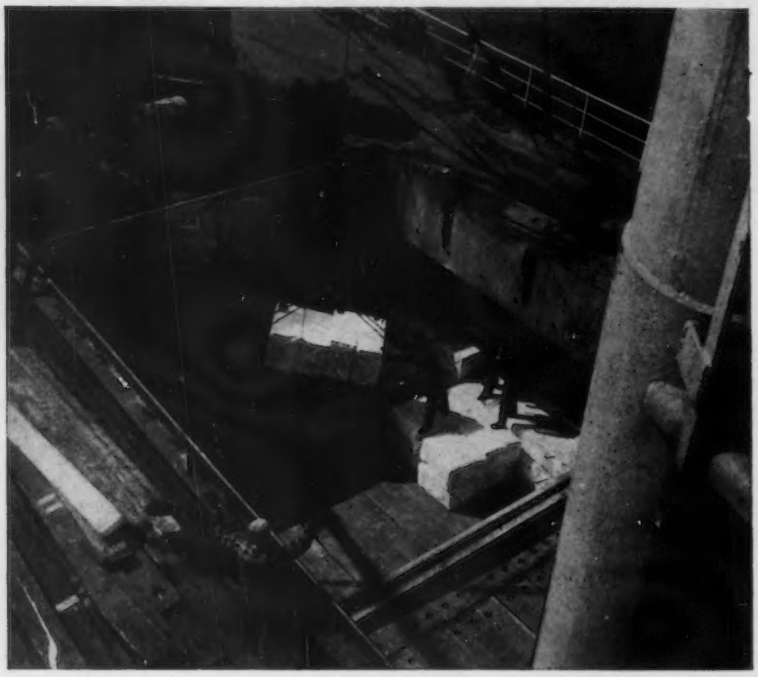
E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

Represented in Canada by
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa

BALES OF GASPESIA BLEACHED SULPHITE PULP for export are loaded into the hold of a 10,000-ton ocean-going vessel.



THIS IS GASPESIA SULPHITE COMPANY

HERE'S WHY IT WILL PAY YOU TO BUY PULP FROM GASPESIA

At Gaspesia we enjoy many natural advantages. Northern spruce and balsam fir—slow-growing, long-fibered, best for sulphite pulp—are the sole sources of the pulp you receive from us. Our access to nearly a million acres of these fine trees assures you a dependable, top-quality supply.

Gaspesia's continuous flow bleaching, regulated by the most advanced control methods, applies automation to every possible operation. Uniform quality —so vital to your finished product—results from Gaspesia's superior equipment, operated by men who have spent lifetimes acquiring the "feel" of pulp making. They confidently urge you to try our pulps.

Gaspesia pulp has earned endorsement for many uses—*from papeteries to boxboard to tissues.* Among its characteristics: high opacity, high brightness, good strength, excellent bulk and trouble-free working properties.

Location on the Gaspé Coast, within easy reach of waterways to the whole world, affords low-cost water transportation, practically ice-free, to nearly every major market area. Shipping time to Europe is about half that from our Pacific Coast. Transcontinental rail systems speedily deliver carload quantities to both the United States and Canadian markets.

Have you tried Gaspesia?

GASPESIA SULPHITE COMPANY LTD.
CHANDLER, QUEBEC, CANADA

SOLD BY: **Anglo Paper Products, Ltd.**
2055 Peel Street, Montreal 2, Quebec

SALES REPRESENTATIVES IN THE UNITED STATES:
Northeastern Paper Sales, Inc.
400 Madison Avenue, New York 17, N.Y.
20 North Wacker Drive, Chicago 6, Ill.

Mercury's

MARK W-7 AUTOMATIC CONTINUOUS REWINDER

Doubles Your Operating Speed

This unit will produce hard, straight rolls . . . automatic, continuous operation at the top operating limit of your converting equipment. A completely self-contained unit that may be operated with any Mercury or other web converting machinery.

SPECIFICATIONS

Maximum roll diameter: 84 inches
Maximum operating speeds: 1200 f.p.m. plus
Constant or tapered tension up to 15-lbs. per inch of web width
Transfer speed: 600 feet per minute
Material: 30-lb. paper to .040 boxboard

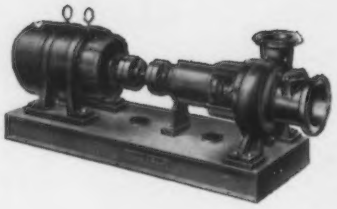
M G D

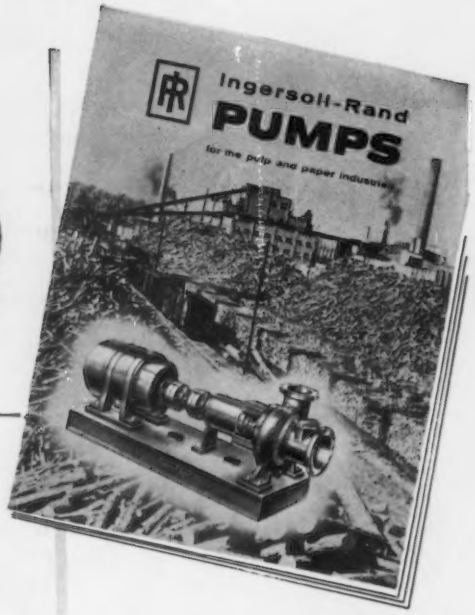
A SYMBOL OF FINE CRAFTSMANSHIP

MERCURY
ENGINEERING CORPORATION
A SUBSIDIARY OF MIEHLE-GOSS-DEXTER INCORPORATED
2100 N. FARWELL AVE. • Milwaukee 2, Wis., U. S. A.

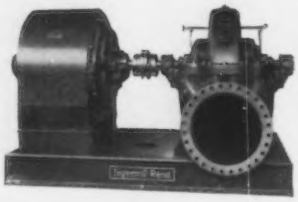
PUMPS MEAN RELIABILITY
for the pulp and paper industry

STOCK PUMPS feature the patented diverging-type impeller in classes EL, EM and EH. This unique design will handle paper stock heavily entrained with air—where other ordinary stock pumps will fail. In addition, the special impeller has handled various types of stocks from 7% to 8% consistency without the aid of a mechanical feed! Over 10% stock has been pumped with a screw-feed arrangement on the suction. For lower stock consistencies and where there is no air problem, classes CL, CM and CH pumps having a conventional impeller can be furnished. For all classes—heads: To 225 ft; capacities to 7000 gpm; sizes 4, 6, 8, 10, 12 inches.



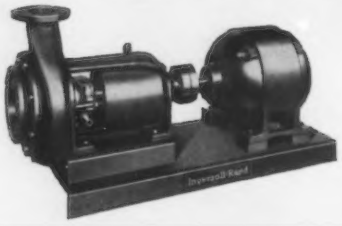


FAN PUMPS of single-stage, double-suction design are ideal for handling comparatively large volumes of liquids at low and medium heads. These pumps may be driven by any type of prime mover, and embody thoroughly modern design features that increase efficiency, insure reliability and lower maintenance costs. Capacities to 60,000 gpm.

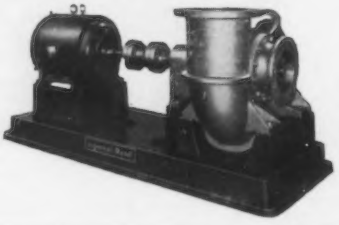


BULLETIN 7296 gives you further specifications and descriptions of all Ingersoll-Rand pumps for the pulp and paper industries. Its 24 pages are filled with cross-sections, data and installation photographs of I-R pumps at work in pulp and paper mills. For your copy of Bulletin 7296, contact your nearest I-R representative or write Ingersoll-Rand, 11 Broadway, N. Y. 4, N. Y.

CHEMICAL PUMPS are offered in a complete line for handling hot and cold acids and alkalis. They are single-stage units of end-suction design that are ruggedly constructed to last longer on the job. For handling highly corrosive liquids, these pumps are built of IRCAMET, a high nickel-chromium-molybdenum alloy steel that is corrosion resistant. Heads to 200 ft; capacities to 4000 gpm.

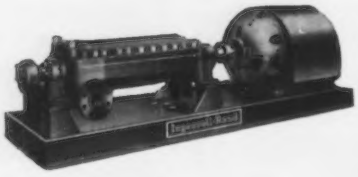


MIXED AND AXIAL FLOW PUMPS have a simplified construction that means fewer parts and less maintenance. Mixed-flow BPM propeller type is specifically designed to deliver large capacities at moderately low heads. Class APL axial-flow pumps are specially designed for handling large volumes at low heads. For both classes—heads to 40 ft; capacities to 20,000 gpm.



VERTICAL PUMPS are designed to handle liquids at heads ranging from a few feet to many hundreds of feet. Heavy-duty construction and high efficiencies are featured. Pump lengths and discharge locations can be furnished to suit the application.

BOILER-FEED AND DEBARKING PUMPS come in three types, each with symmetrical case and Unit-Type rotor design for easier maintenance and better operation. CNTA pumps are horizontally-split units available in 1-1/2, 2, 2-1/2 and 3 inch sizes. Capacities to 700 gpm; pressures to 1000 psi. HMTA pumps are horizontally-split units available in 2, 3, 4, 5 and 6 inch sizes. Capacities to 1600 gpm; pressures to 1200 psi. CHTA pumps are of "double-case" construction with vertically-split, forged steel outer casing. Available in 3 through 12 inch discharge sizes. Capacities to 7200 gpm; pressures to 6500 psi.



Ingersoll-Rand

10-991 11 Broadway, New York 4, N.Y.

CONDENSERS • PUMPS • GAS AND DIESEL ENGINES • TURBO-BLOWERS • ROCK DRILLS • COMPRESSORS • AIR AND ELECTRIC TOOLS

Trends

Paper and Board Mills Rates for 1959

Paper mills operated at 92.5% of capacity in 1959 compared with 87% for 1958, according to preliminary figures from APPA. Board mills operated at 92% in 1959 versus 86% in 1958, based on NPA figures.

Folding Boxes Continue Gains

Shipments of folding cartons last month topped December of 1958 by 4.4%. At the same time, tonnage was up 2.2% over the like period of last year. The December advance placed the year-to-date figure 3.9% ahead of 1958 in dollar volume and 2.5% ahead in tonnage. Industry volume for the year is $944 million, compared to $909 million registered in 1958. Total tonnage this year is 2,372,000 tons which is 58,000 tons better than in 1958 when 2,314,000 tons were shipped.

New Mills Still Talked About

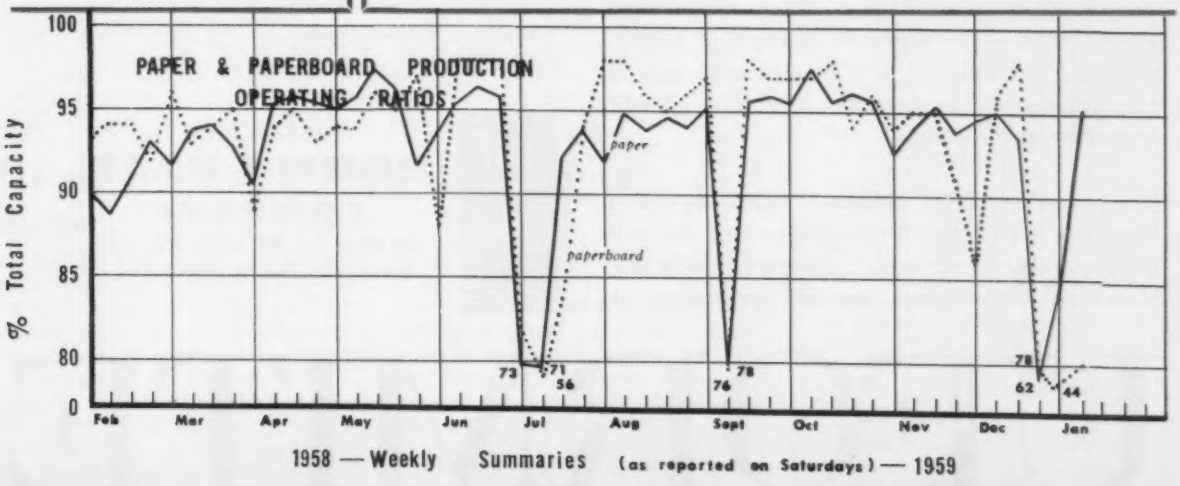
Talk of new mills continues to float around. Chairman of the newly formed MacMillan, Bloedel & Powell River, Ltd., has reaffirmed the company's interest in construction of a pulp and/or paper mill near Bend, Ore. He said that the company has an agreement to acquire the controlling stock of the Brooks-Scanlon Co. of Bend during 1960.—Boise Cascade Corp. has recently closed an agreement with the John Hancock Mutual Life Insurance Co. whereby the insurance company has committed to Boise Cascade up to $14 million for expansion. Improvements are said to include expansion of the kraft board mills, container plants and veneer mills.—Arkansas local newspapers continue to report that Potlatch Forests, Inc., will build a $35 million pulp and paper mill near McGehee in that state.

Corr. Ahead 13% Last Year

Production of corrugated boxes and board in 1959 ran more than 13% higher than in 1958, according to figures released by the Fibre Box Ass'n.

Waste Paper Soft in Eastern Markets

The waste paper market in the major consuming areas along the East Coast has failed to recover from the year-end holiday slump. Prices have been cut on mixed paper, old corrugated and white newsblanks.



For every wet-strength problem . . .

a UFORMITE resin to solve it

Need wet strength? . . . You'll find that one of the Rohm & Haas UFORMITE resins will suit your processing requirements and the end-use application—be it toweling, napkins, bag paper, butchers' wrap, paperboard, or a specialty item. Note the advantages exhibited by all three resins: 1) excellent storage stability, 2) immunity to sulfate ions, 3) ease of handling (no acid pretreatment or aging required), 4) easy broke recovery.

The properties of the individual resins are these: UFORMITE 700—high off-the-machine wet strength without attendant broke recovery problems. UFORMITE 711—efficient all-round performance at moderate cost. UFORMITE 467—maximum economy in unbleached grades of paper.

Write for our 24-page booklet, UFORMITE *Resins for Wet Strength Paper.*

UFORMITE *is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.*

Chemicals for Industry

ROHM & HAAS COMPANY

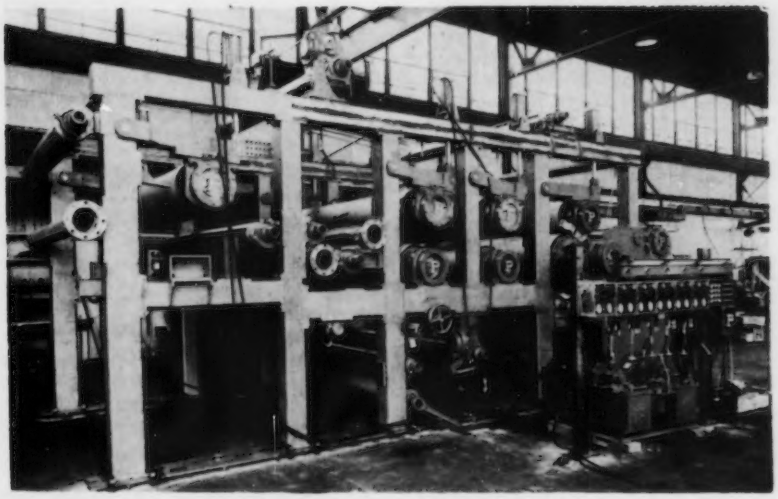
THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

UFORMITE

PJT PAPER TRADE JOURNAL

WEEK OF JANUARY 25, 1960



Stainless Wet End for Portorican Paper Products

An unusual wet end section of a 100 inch-wide cylinder board machine, has been shipped to Portorican Paper Products Co., San Juan, Puerto Rico. The unit, built by Patton Mfg. Co., consists of everything between the existing cylinder mould and vats, and the first dryer section, and is unusual in the liberal use of stainless steel. Portorican Paper Products specified stainless because of severe atmospheric corrosion problems.

All of the framework, with the exception of the main press frame itself, is fabricated of ⅜ inch stainless steel plate. While the worm rolls are rubber covered, all other rolls are stainless steel, as are the journals supporting them. "The construction of this wet end section was a particular challenge because of the metallurgy involved," said Patton's paper mill machinery division general manager, Wayne T. Crannell. "Fortunately, we had prior experience in welding and forming stainless steel to close tolerances."

Patton's president, George C. Herbert, and Mr. Crannell recently traveled to Puerto Rico to supervise installation of the equipment and assist in start-up operations. The machine will manufacture liner and 9 point, as well as bleached manila board for the mill's own conversion operations.

Hercules Powder Plans to Acquire Imperial Color Stock

Hercules Powder Co. and Imperial Color Chemical & Paper Corp. have announced that both companies have agreed in principle to the acquisition of the business and assets of Imperial in exchange for Hercules stock. Albert E. Forster, president of Hercules, and Arthur F. Brown, president of Imperial, in a joint statement said the proposed action has been tentatively approved by the directors of each of the companies.

If the boards of directors of both companies approve a formal agreement now in preparation, and the stockholders of each company authorize the steps necessary for completion of the transaction in March meetings, the 1,019,604 shares issued and outstanding of Imperial common stock will be exchanged for 509,802 shares of a new class of Hercules stock, to be designated as $2 Cumulative Convertible Preferred Stock. This new stock will be subordinate to the existing 5 per cent preferred and will be non-callable for five years.

The exchange would be at the rate of two shares of Imperial for each share of the new Hercules preferred stock. Such new Hercules stock would carry the right to be converted into 9/10 of a share of Hercules par value common stock for a period of 60 days subsequent to its date of issue and thereafter into 8/10 of a share of such common stock.

The present Imperial Color Chemical & Paper Corp. originated in 1902, and over the years it has become one of the leading U. S. suppliers of pigment colors to the paint, varnish, plastic, printing inks, and synthetic fiber industries. It is a major supplier of fine-quality wallpapers. Its common stock is listed on the American Stock Exchange. The company, with its principal office in Glens Falls, N. Y., has plants located in Glens Falls and Plattsburg, N. Y., and a wholly owned subsidiary which manufactures and sells in St. Johns, Que.

Paper and Paper Board Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending January 9, 1960, at 95.3 per cent compared with 80.3 per cent, revised for the preceding week. The ratio was 91.0 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the period January 1-9, 1960, at 80 per cent, compared with 44 per cent for the preceding December 27-31, 1959, period and 78 per cent for the January 1-10, 1959, period.

(Detailed statistics on page 46)

Announcing a Permanent European Editor

Ernest F. Barker

We are pleased to announce the appointment of Ernest F. Barker as resident European editor.

Mr. Barker, accompanied by his wife Dorothea, will arrive in Europe in early April to take up residence there—most likely in Monaco—to remain there for a period of at least three to five years. They will travel widely through Europe, including Russia, Scandinavia, Great Britain, Central Europe, Southern Europe, the Balkans and possibly also the Near East. They will be "on tour" three weeks of each month to "gather information of interest and value to our readers."

Mr. Barker is no stranger to the readers of PAPER TRADE JOURNAL. He has served us as field editor and special correspondent since 1954, and has been the author of numerous articles.

A chemical engineer, Mr. Barker has broad experience in the pulp and paper industry. He obtained his education at the University of California and two European Universities. For five years he was associated with the Oxford Miami mill of Oxford Paper Co. in West Carrollton, Ohio. Previous to this, he was with the Sorg Paper Co. in Middletown, Ohio.

Mr. Barker started his career in the pulp and paper industry with Blake, Moffit & Towne, large paper merchant firm on the West Coast, headquartered in San Francisco. There he operated the firm's testing and consulting laboratory for four years.

The prime purpose of Mr. Barker's appointment is to report significant developments in the European pulp and paper industry for our North American readers.

Nicolet to Install Largest Glassine Supercalender

The largest glassine supercalender ever built will be placed in operation at Nicolet Paper Corp., West DePere, Wis. Designed and built by Appleton Machine Co., the 147-inch wide, 16 roll stack is the third to be installed since 1955, each being larger than its predecessor.

Powered by a 600 h.p. Westinghouse d.c. drive, the unit is designed for a maximum operating speed of 1500 f.p.m. The maximum lineal inch nip pressure at the bottom nip will be 400 lbs. Estimated to weigh in excess of 385,000 lbs., the giant supercalender will be installed and ready for operation early this year and is part of an expansion program which includes a new paper machine and other auxiliary equipment.

Columbia River Simplifies Division Names

Columbia River Paper Co. has announced that the names of its various divisions have been simplified.

Effective January 1, Oregon Pulp and Paper Co., Paper Division, Salem, Ore., became Columbia River Paper Co., Oregon Pulp and Paper Division; Columbia River Paper Mills, Vancouver, Wash., became Columbia River Paper Co., Vancouver Division; and Oregon Pulp and Paper Co., Lumber Division, Salem, Ore., became Columbia River Paper Co., Lumber Division.

These changes do not effect the Company's policies, management or ownership. On February 1, the executive offices of Columbia River Paper Co. will be moved to 1121 S. W. Salmon St., Portland 5, Ore.

CWP&P's Appleton Mill Steps Up Capacity

The Appleton mill of Consolidated Water Power & Paper Co. is stepping up by 47 per cent its capacity for burning spent sulphite liquor with the start-up of a new boiler plant.

Construction of the million dollar project began last spring. One of two new boilers went into operation in late December with a second scheduled to go "on the line" early next month. A new steel and metal building houses the new boiler which replaces six smaller capacity units.

The boiler in operation is designed to burn oil and 20,000 lbs. of 55 per cent concentrated spent sulphite liquor per hour. Capacity of the former plant for burning sulphite liquor of this concentration was 13,600 lbs. per hour. The other new boiler will burn oil and bark refuse from the company's pulp-making operations in Appleton.

Consolidated was one of the pioneers in evaporating spent sulphite liquor to 57 per cent solids content and burning the concentrate for industrial fuel. An evaporator plant was installed at the Interlake mill in 1953 and has substantially reduced the mill's discharge of oxygen demand to the Fox River. The new burning equipment is designed to make this improvement program still more effective.

Continental Can to Absorb Southern Paperboard

The merger of Gair Woodlands Corp. into Southern Paperboard Corp. and the subsequent merger of Southern Paperboard into Continental Can Co. has been announced by Charles B. Stauffacher, executive vice president of Continental's Robert Gair Paper Products Group.

Both corporations had been operating as wholly owned subsidiaries of Continental Can Co. since June 1959. Continental had acquired 60 per cent ownership of the corporations when the Robert Gair Co. was merged into Continental in 1956; complete control was accomplished in June 1959 with the acquiring of the assets of the Fort Wayne Corrugated Paper Co. by Continental.

Principal office of Southern Paperboard was in Port Wentworth, Ga., where it operated a paperboard mill. The mill, which will now be known as Continental Can plant No. 540, produces kraft linerboard for use principally in the manufacture of corrugated paperboard. Capacity is approximately 625 tons per day.

PAPER PEOPLE

A. E. Goldbeck

R. R. Tate

Scott Fills Newly Created Posts

Arthur E. Goldbeck has been named sales manager for converting papers and Robert R. Tate, sales manager for printing papers with Scott Paper Co.'s Hollingsworth & Whitney western sales division.

In his newly created post, Mr. Goldbeck will be responsible for supervising converting sales for the entire western division. In addition, he will continue to handle accounts which he held at the time of this promotion.

Mr. Goldbeck has wide experience in sales. He joined Hollingsworth & Whitney in 1924. In 1929 he became manager of the order department, and in 1934, joined the sales organization. Mr. Goldbeck joined Scott Paper upon the merger of Scott and Hollingsworth & Whitney in 1954.

Mr. Tate will be responsible for supervising merchant sales for the entire western division. He joined the company in 1959 at the H&W sales office in Chicago and, prior to becoming affiliated with Scott, had extensive experience in printing paper sales in the midwestern area.

Mr. Tate graduated in 1939 from Mariette College and has had special study at Ohio State University.

Premo Returns to Gould As Asst. to President

Richard Premo has returned to the Gould Paper Co., Lyons Falls, N. Y., as assistant to the president, Ralph Luethi. Mr. Premo is also assistant general manager of the company.

Mr. Premo left the Gould Paper company in 1957 to be vice president and general manager of J. & J. Rogers Co., Ausable Forks. He later went to the Bulkey, Dunton Pulp Co. as a technical consultant, a position which involved traveling in various parts of the U.S. and the world.

Before joining the Gould Paper Co., the first time, Mr. Premo was employed by the Savage Arms Co., Utica, and the Gulf States Paper Co. He is a graduate of the University of Alabama and holds a bachelor's degree in chemical engineering.

Macy Returns to Consultant Work

Frederick E. Macy, former manager of paper mills for Brown Co. in Berlin, N. H., has resumed his work as a consultant specializing on modernization and on the development of technical and industrial papers. His new address is School Lane House, Philidelphia 44, Pa.

Mr. Macy has been employed in the paper industry for nearly 30 years beginning as a machine tender at Three Rivers, P. Q., and then becoming superintendent at American Writing Paper Corp. in Holyoke, Mass. Following this he worked in sales for S. D. Warren Co., Champion Paper and the Mead Corp. Mr. Macy then became president of A. M. Collins Mfg. Co. in Philadelphia, Pa., until 1950. He then worked as a consultant mostly on operational problems, stock preparation or modernization of mills until he went to Brown Co.

Grace Paper Div. Names Three Executives

The Grace Paper Co., has appointed George W. Scrimshaw general manager of Grace paper operations in Puerto Rico, with headquarters in San Juan. The Grace Paper Co. is part of the Latin American Paper and Chemical Group of W. R. Grace & Co. of New York.

Two other executives were also named.

Felix Hertzka is general mill sales manager for Grace's paper manufacturing operations in Puerto Rico with offices in New York.

Klaus G. Scheye becomes manager of commercial development. He will also be located in New York.

W. R. Grace & Co., through the Grace Paper Division, operates a bagasse pulp and paper mill and a converting plant which produces a line of folding boxes and corrugated containers in Puerto Rico. The pulp and paper mill is located near Arecibo, 50 miles from San Juan. The converting plant is located on the outskirts of San Juan.

Mr. Scrimshaw was formerly president of the Krafco Container Corp. which he organized in 1948 and, within four years, expanded into a five-plant operation specializing in corrugated shipping containers. The company's main plant was located in Monroe, La. For the past few years he has been vice president and special projects officer of Vision, Inc., the publishing company.

Mr. Hertzka, as vice president of Butler Overseas Corp., a subsidiary of the Butler Co. of Chicago, was in charge of its domestic and foreign pulp and paper business. He had prior experience in the paper business as export manager of Reinhold Gould, Inc., and vice president of Swedish Interamerican Co. With the latter two companies, Mr. Hertzka organized and developed export and import businesses, particularly in Latin America.

Mr. Scheye has been with the Grace organization since 1955 in the General Development Division. Previously he was associated with Coverdale and Colpitts, management engineers, and was assistant to the president of Peter J. Schweitzer Paper Co., manufacturer of cigarette paper. He has been associated with Grace's paper expansion program in Latin America for the past several years.

F. A. Knight

C. M. Koon

Eastern Fine Paper Fills Executive Posts

Frank A. Knight has been named division manager of the Eastern Fine Paper and Pulp Division, Standard Packaging Corp., Bangor, Me. Coincident with the appointment of Mr. Knight was the promotion of Charles M. Koon as production manager and C. T. Bockus as technical director. Mr. Koon succeeds Mr. Knight as production manager. In turn Mr. Bockus steps into the technical director job formerly held by Mr. Koon.

Mr. Knight is a 1938 graduate of the Massachusetts Institute of Technology. Joining Eastern following graduation, he has successively served as chemical engineer, pulp mill superintendent, manager of pulp manufacturing and, in 1958, was made production manager. In April 1959 Mr. Knight was made a member of the Eastern Division's Executive Committee.

Mr. Koon, joined the Eastern organization as technical director in September 1958. Prior to that, he had spent six years with Oxford Paper Co., Rumford, serving as technical service supervisor. Earlier, he had been a research associate at the Institute of Paper Chemistry, Appleton. He is also a former technical superintendent of Munising Paper Co. From July 1949 to March 1952, Mr. Koon was in Europe as assistant chief and later, acting chief of the Pulp, Paper and Timber Section, Office of the Special Representative, Economic Cooperation Administration. He holds Bachelor's and Master's degrees from the New York State College of Forestry, Syracuse University, Department of Pulp and Paper Manufacture.

Mr. Bockus is a 1927 chemical engineering graduate of the School of Pulp and Paper Technology of the University of Maine. He has been a member of the Eastern organization since 1930, serving on the laboratory technical staff for over 25 years.

Mr. Bockus was named Eastern's process control superintendent in 1957. In November, 1958, he was promoted to assistant technical director, holding that position until his new assignment as technical director.

Waber Replaces Brown At Hamilton Paper

Frank L. Brown, assistant secretary and purchasing agent of Hamilton Paper Co., Michigan Division, at Plainwell, Mich., retired December 31 after more than 40 years with the company.

Richard F. Waber has been appointed purchasing agent to replace Mr. Brown, and John G. Kauffman has been elected assistant secretary. Mr. Waber was assistant purchasing agent at the Mac Sim Bar Paper Co. in Otsego for 12 years prior to joining Hamilton Paper Co. in November, 1959. Mr. Kauffman is mill engineer at Hamilton and started with the company in 1950.

Mr. Brown began as a bookkeeper and cost accountant with the old Michigan Paper Co. in June 1919 and was appointed purchasing agent in 1924.

Hinga to Head Sutherland Production

Gordon Hinga has been appointed production manager for all Kalamazoo manufacturing operations of the Sutherland division of KVP Sutherland Paper Co.

The announcement was made by H. R. O'Donnell, assistant to President Dwight L. Stocker.

Mr. Hinga will be in charge of both board mill and converting plants. Formerly general superintendent of converting operations, he has been employed at Sutherland since 1934. He began work in the company's press room, was promoted to sales service and later to production planning.

In 1950 Mr. Hinga was named head of the production planning department, following which he was put in charge of the company's productions services department.

NPA Elects Pellot Chm., Financial Officers Group

Warren M. Pellot, treasurer of River Raisin Paper Co., Monroe, Mich., has been elected chairman of the Financial Officers Group of National Paperboard Ass'n.

A graduate of Michigan State College in 1933, Mr. Pellot began his business career with Cadillac Motor Car Division, General Motors Corp., in the accounting department. In 1948 he resigned from General Motors to accept the position of cost accounting supervisor at River Raisin. In 1951 he became controller and assumed his present post in 1956.

Kayhart Named Engineering Mgr. for Allied Paper

Ted Kayhart has been appointed manager of engineering for the King, Monarch and Bryant Mill Divisions of the Allied Paper Corp. of Kalamazoo, Mich., L. B. Owen, Allied vice president announced.

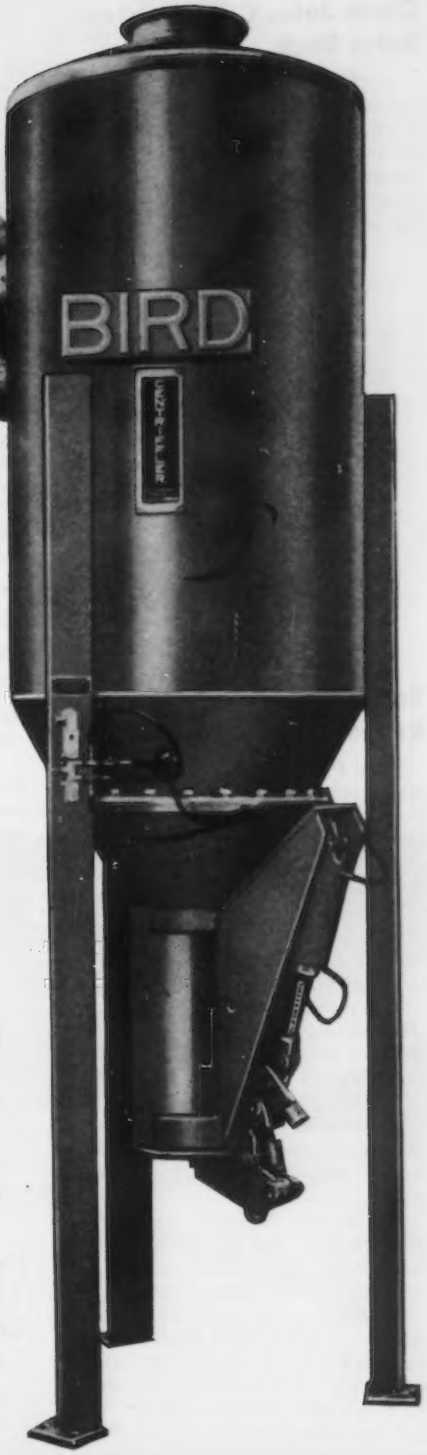
Mr. Kayhart, former chief engineer of the Carolina Division of the Riegel Paper Corp., is a mechanical engineering graduate of the Newark College of Engineering, Newark, N. J. In his new position he will be responsible for the direction of the engineering and maintenance functions of the three Allied divisions.

Looking for a new position?

Looking for new personnel?

Keep your eye on our Classified Advertising Section

Junk and dirt like this damages papermaking equipment destroys paper quality



BIRD CENTRIFFLERS KEEP IT OUT

Bird Centrifflers stand between expensive processing equipment and all that foreign matter that gets in with the stock before it gets beyond the pulpers. In some cases, savings in Jordan fillings alone pay for the Centriffler installation, not to mention the reduced wear and tear on pumps, wires, felts, cutters and other costly equipment.

Bird Centrifflers take up little space, have no moving parts, require minimum operating and maintenance attention. When desired they may be hooked up for pressure discharge to Cycleans or Dirtecs without pumping. Dirt removal may be by quick acting manual or automatic dumping mechanism.

Let us submit layouts and estimates.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA 9, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

Clark Joins Consolidated Sales Staff

Arthur W. Clark has joined the Consolidated Paper Co., Monroe, Mich., as a salesman, with headquarters in the Chicago office of the company. Mr. Clark was formerly with the Container Corp. of America for eight years.

F. P. Baughman

Baughman Joins Taylor as Research Group Leader

Fred P. Baughman, formerly a special services engineer with E. I. duPont de Nemours & Co., has joined Taylor Fibre Co., Norristown, Pa., as a group leader in the technical department. He heads up the physical chemistry-fundamental studies group section for the company, a leading producer of laminated plastics and vulcanized fibre.

The move is in line with an intensified research program recently announced by Taylor, which will probe more deeply into the fundamental chemistry and physics of laminates and vulcanized fibre, and into the physical changes which occur in them during manufacture and processing stages.

While at DuPont, from 1956 through 1959, Mr. Baughman worked in the engineering and textile fibre groups. Earlier associations include four years as instructor in mathematics at Montana State College, while completing studies for his baccalaureate and doctor's degrees in chemical engineering and ten years as a metallurgical chemist with various mining companies in Montana and Idaho.

Hamilton Named Production Mgr. for Bergstrom Paper

Appointment of F. R. Hamilton to the position of paper mill production manager has been announced by Bergstrom Paper Co., Neenah, Wis. Mr. Hamilton recently resigned as director of research and development for Simpson-Lee Paper Co., Everett, Wash. He received his B.S. degree in chemical engineering in 1937 and M.S. degree in 1938 from the University of Michigan at Ann Arbor. He began his paper career in 1938 with the technical department of Allied Paper Mills, Kalamazoo, Mich.

Mr. Hamilton became assistant technical director of Allied Paper in 1943; assistant mill superintendent in 1948; and assistant plants superintendent for papermaking in 1949. Joining Simpson-Lee in 1951 as technical director, he became assistant general superintendent and later, general superintendent. Until December 1957, Mr. Hamilton was production manager. In 1958 he was appointed director of research and development for Simpson-Lee.

Nekoosa-Edwards Power Dept. Promotes Two

Nekoosa-Edwards Paper Co. has announced two promotions in the power department.

John Kirst, Jr., has been assigned to the engineering and power offices as instrument engineer where he will perform staff work in general power problems as well as in the instrument field. Erwin Vehrs was named foreman of the Nekoosa mill power department, replacing Mr. Kirst.

Mr. Kirst has been with the company since 1946 and was an instrument repair specialist for 11 years before being named foreman of the Nekoosa power department in October 1958.

Mr. Vehrs also joined Nekoosa-Edwards in 1946 and worked in the Port Edwards finishing department for several months until transferring to the power department at that mill. He was leadman in the Port Edwards power department at the time of his promotion and transfer to Nekoosa.

Champion Names Peters Group Leader

Paul E. Peters has been promoted to group leader, pilot plant operations, in The Champion Paper and Fibre Co. Research and Development division, according to W. Phalti Lawrence, director of the division.

Mr. Peters, a graduate of Hamilton High School, joined Champion in 1941 as a research helper and subsequently became research assistant, research technician, research foreman, and research project supervisor.

OBITUARIES

Otto Haas, founder and chief executive of Rohm & Haas Co., Philadelphia chemical manufacturing firm, died at his home on January 2. Shortly before his death, Mr. Haas had retired as active head of the company, due to failing health. Born in Stuttgart, Germany, he came to the United States in 1902, and in 1909 founded the American firm of Rohm & Haas.

Charles W. Boyce, 66, former executive secretary of the American Paper and Pulp Ass'n. died in Doctors' Hospital, New York, after a short illness, on January 11.

Dr. Boyce came to the APPA in 1928, in charge of the Woodlands Department, subsequently being made secretary of the association. He served from 1920 to 1928 with the U. S. Forest Service in charge of economic studies of the pulp, paper and lumber industries. He resigned from the APPA in 1940. Later he joined the Forest Products Division of the War Production Board in Washington, D. C. Since 1944 he has been a consultant in the paper field and served the American Newspaper Publishers Ass'n. continuously, as a consultant, since 1951.

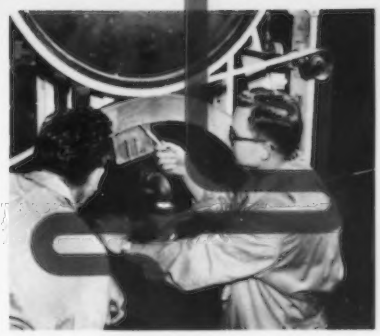
Henry Bedinger Rust II, 47, a vice president and director of The Rust Engineering Co. and its affiliates, died January 8 of a heart attack at Fort Walton Beach, Fla.

Mr. Rust, with his brother, George M. Rust, operated the engineering firm's Birmingham, Ala., office.

James E. Vallillee, 58, executive vice president of the Ontario Paper Co., Thorold, was stricken fatally January 8 while returning from a business trip.

Mr. Vallillee held executive posts in paper, shipping and aluminum firms allied with Ontario Paper. He also was executive officer of the Canadian Pulp and Paper Assn.

Martin Luther Haggerty, 76, executive vice president of George La Monte & Son, Nutley, N. J., manufacturer of safety paper for checks, died January 10 in Hackensack Hospital. Mr. Haggerty had been associated with the La Monte firm since 1904.



Beloit Research
dedicated to paper progress

when water leaves the press nip

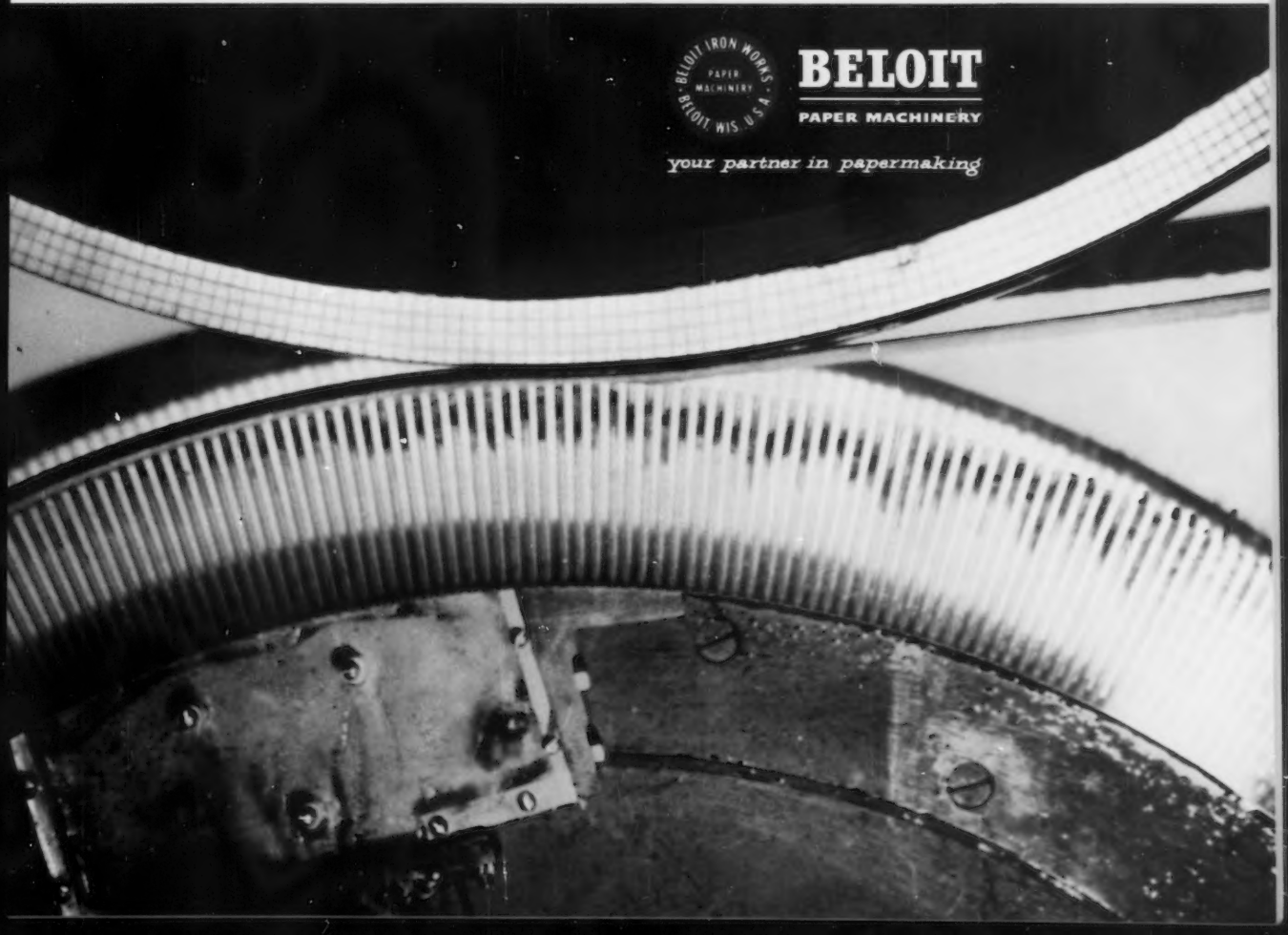
This suction press has never dewatered a sheet . . . yet it has resulted in improved production on thousands of tons. Beloit research engineers built the full-size cutaway model (above) to study water movement. Data derived from the revealing stopped-action photo and other laboratory tests have led to a better understanding of this phenomenon. Improved sheet and felt runs . . . greater press speeds . . . new economies . . . key items in Beloit's continuing research and development program. Beloit "paperesearch" means paper progress—more efficient machines for you, better paper for your customers.

"STROBE" SHOT SHOWING MOVEMENT OF WATER AFTER LEAVING NIP. PHOTO BY C. B. DAHL

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS. U.S.A.

BELOIT
PAPER MACHINERY

your partner in papermaking



Beloit machines hold speed and production records on tissue, newsprint, publication grades, kraft, and cylinder board.

your partner in papermaking

BELOIT IRON WORKS PAPER MACHINERY BELOIT, WIS. U.S.A.

BELOIT

PAPER MACHINERY

NEWS OF CONVERTERS

L. M. Davis

Pollock Paper Appoints Davis Vice President

Pollock Paper Co., a division of St. Regis Paper Co., has announced the appointment of Leo M. Davis as vice president of Pollock and general manager of its western operations. For the past 12 years Mr. Davis has served as assistant to Mr. Jacobs in the company's executive offices in Dallas and has been a member of Pollock's central administrative staff, in addition to serving as general manager of Pollock's paper mill operations at Columbus, Ohio.

Mr. Davis will establish his headquarters in San Francisco, where he will be responsible for Pollock's entire western operation including manufacturing plants in Seattle, Wash., and San Jose, Calif.; and sales offices in Seattle; Portland; San Francisco and Los Angeles.

Two Executives Step Up At Paper Package Co.

The election of Robert M. Mauzy as vice president and the appointment of Edward R. Garritson general sales manager of the Paper Package Co., Indianapolis, Ind., have been announced. The company is a subsidiary of Eli Lilly & Co.

Mr. Mauzy joined Eli Lilly in 1928 and was transferred to Paper Package in 1930. In 1953 he was elected secretary of the company.

Mr. Garritson joined Paper Package in 1937, and served as a salesman in Cincinnati, Ohio, until his transfer to the home office in 1958 as assistant general sales manager. In his new position, Mr. Garritson will assume full responsibility for marketing, which for many years has been directed by Martin L. McManus, vice president in charge of sales, who will retire later this year.

Springfield Tablet Mfg. President Retiring

H. F. Chalfant will retire February 11 as president of the Springfield Tablet Manufacturing Co. and its wholly owned subsidiary, the Springfield Paper Co.

Mr. Chalfant has been president of the 40-year-old corporation, one of the leading tablet manufacturing companies in the midwest, since the death 15 years ago of H. S. Jewell, one of the founders of the firm.

The corporation's board of directors also announced the retirement of Russell E. Morris, for many years vice president and general manager of the tablet company, effective January 9.

Keith G. Wells, who has been vice president of the company for the past two years, has been promoted to the executive vice presidency and will assume active management of the corporation on Mr. Chalfant's retirement February 11.

Hoerner Boxes Announces Management Changes

R. N. Hoerner, Sr., chairman of the board and president of Hoerner Boxes, Inc., Keokuk, Iowa, has announced the appointment of M. P. MacDougall, vice president, as general manager of the Keokuk operation. J. M. Morris, Jr., was elected to the position of vice president, with general responsibility for sales in the states of Iowa, Illinois and southern Wisconsin.

Also announced is the appointment of Wilburn E. Ray as manager of the Mission, Tex., sheet plant, now under construction and scheduled for completion in late February or early March. Mr. Ray, presently assigned to the company's Fort Worth, Tex., plant sales force, was employed by Hoerner in 1946.

A sheet plant will be built at Danville, Ill. It will contain 40,000 square feet of space, and is scheduled to be ready for operation around June 1. Robert E. Wilson, sales representative for the Keokuk plant since April 1952 in parts of Illinois and Indiana, has been selected as manager for the Danville operation.

H. G. Murphy

Mead Begins Operations At West Coast Plant

The Mead Corp. has begun operation of its first manufacturing plant on the West Coast, it was announced by D. F. Morris, Mead president.

The new Mead packaging operation located in Los Angeles, Calif., produces cartons for the soft drink, beer, grocery, and food industries, and a broad line of folding cartons for numerous industries.

Homer G. Murphy, a Californian for the past six years, is general manager of the new plant. He has been a resident of California since 1954 and until recently was the West Coast sales manager for the Folding Cartons Division of Continental Can Co., Inc.

Mr. Murphy has been associated with the paper industry since 1946.

Packaging Corp. Creates New Sales Manager Post

L. J. Moore has been appointed to the newly created post of food packaging sales manager of Packaging Corp. of America.

A veteran packaging specialist, Mr. Moore was with the Sutherland Paper Co. for 19 years, and since 1945 has concentrated on sales of paraffined cartons and food packaging.

In his new position, he will head Packaging Corp.'s expanding program of serving the dairy, meat, margarine, frozen food, bakery, and other industries with particular emphasis on the use of the company's solid bleached paperboard.

THIELE KAOLIN

SUPERIOR CLAYS

for FILLING or PAPER COATING

- **Controlled Particle Size**
- **Excellent Color**
- **Standardized Low Viscosity**
- **High Brightness**

Thiele Water-Washed Clays are mined from vast holdings in the heart of Georgia's clay belt, carefully tested and controlled while being processed at Thiele's modern plant. Two spray drying plants assure coating clays that will provide EASIER MAKE-DOWN — IMPROVED HANDLING—LOWER MOISTURE CONTENT—LOWER SOLUBLE SALT CONTENT—MORE UNIFORMITY—LOWER ABRASION.

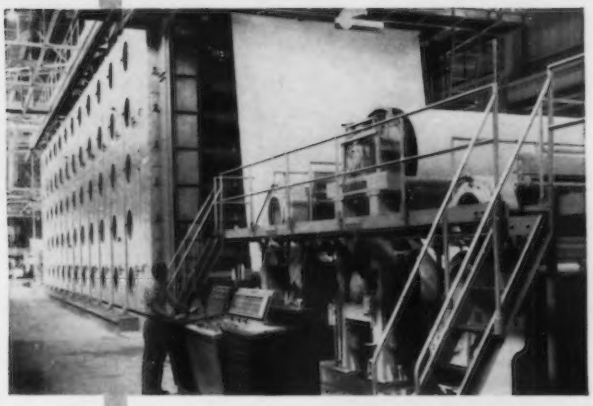
Write for full information and sample of Thiele Kaolin Coating or Filler Clay for your particular use.

Thiele Kaolin Company

P. O. BOX 270 • SANDERSVILLE, GA.

SANDY HILL IS PROUD

Bowaters Chose SANDY HILL – Kamyr Components



Bowaters' Wet Machine with Sandy Hill — Kamyr Feltless Presses and Predryers.

Bowaters' three Sandy Hill-Kamyr Vacuum Washers, part of the three-stage Kamyr bleach plant system.

Sandy Hill Iron and Brass Works congratulates Bowaters Carolina Corporation on the completion of its revolutionary new pulp mill at Catawba, South Carolina, and Sandy Hill is proud of the part it was privileged to play in the successful operation.

The three-stage bleach plant system, including the bleach tower equipment, is a Sandy Hill installation. The bleach system consists of chlorination, caustic and calcium hypochlorite. Kamyr's proved capability of producing superior quality, bright and strong pulp has resulted in more mills throughout the world bleaching pulp the Kamyr way than by any other method.

Sandy Hill bleach components at Catawba include three vacuum washers, steam mixers, circulation pumps and scrapers.

The Sandy Hill-Kamyr wet machine has two heavy presses with a set of Sandy Hill predryers between them. Advantages of the Kamyr wet machine include higher production of dryer pulp, elimination of felts, lower capital expenditure and maintenance costs, and smaller space requirements.

Write for folders describing in detail:

PULP FORMING EQUIPMENT
PULP BLEACHING EQUIPMENT

THE
SANDY HILL
IRON AND BRASS WORKS
HUDSON FALLS, N. Y.

Why Crankshafts Fail

Odds are, says the author, that crankshaft failures are the result of abnormal external forces and conditions, rather than "defects in materials and workmanship."

W. E. Irwin,
Manager, Service Department,
Industrial Engine Plant,
Caterpillar Tractor Co.,
Peoria, Ill.

When a major mechanical failure occurs to an engine, it is a natural reaction for the owner to blame the manufacturer. Company representatives, investigating such failures, are often met with such remarks as, "Your engine broke a crankshaft and ruined our torque converter," or "Your engine has failed and we expect you to give us a new engine, or at least a new crankshaft and cylinder block."

Although engine builders often recompense owners for engine damage resulting from crankshafts and other engine components that fail because of "defects in materials or workmanship," facts accumulated over the years prove that the odds are heavily in favor of crankshaft failures being caused by some external force or condition.

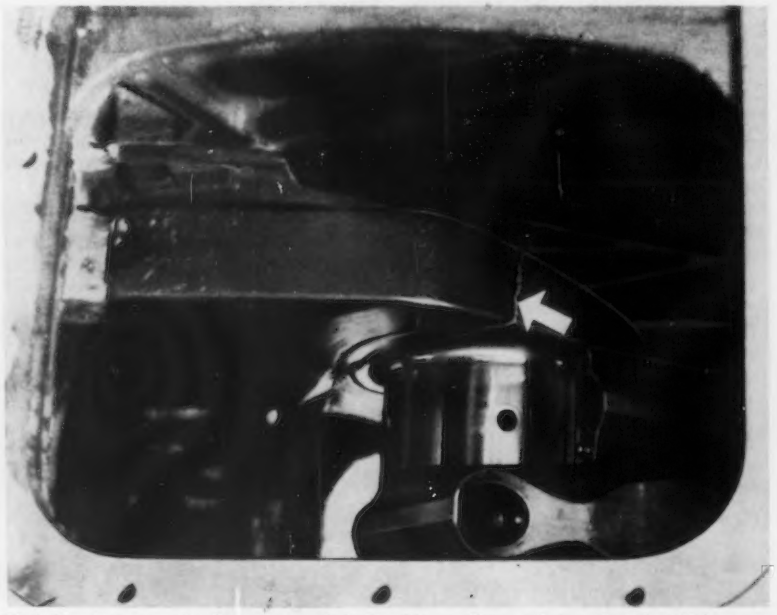
No matter who builds the engine, crankshafts and bearings are not designed to withstand the extreme stresses that can be exerted on them when various types of power take-offs are misaligned, improperly positioned endwise or so designed that they can exert abnormal forces on the crankshaft.

Clutch Alignment Critical

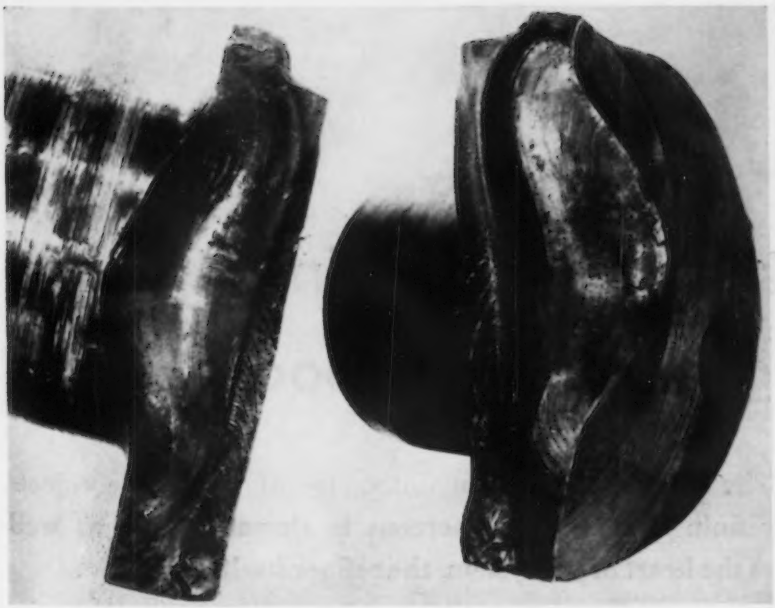
Recently a relatively new engine on a drilling rig experienced a severe seizure of the rear main bearing which ruined the crankshaft, as well as the cylinder block, causing damage amounting to nearly $10,000. The engine was driving directly into an air clutch and an on-the-job check revealed the inner drum of the clutch was extremely misaligned in relation to the outer drive ring. The extreme side loads exerted on this engine's flywheel and crankshaft caused the rear main bearing to seize the full length of its bore, generating so much heat that both the crankshaft forging and cylinder block casting cracked beyond repair.

Alignment of air clutches is critical. The higher the air pressure in the boot, the closer the alignment must be to keep the side loads within safe limits. Misaligned air clutches can cause failure to any member to which they are fastened, be it a diesel engine, a torque converter, compound pump or some other attachment.

In another case, several diesel engines powering torque converter equipped excavators experienced rear main (thrust) bearing failures. The front thrust flange of the rear main bearing became badly scored and, in some cases, broke off. It was found that the power train design allowed the torque converter to exert a linear pull on the crankshaft with thousands of pounds of force under full load conditions. The design was changed by the excavator manufacturer to include a thrust bearing to absorb the pull of the torque converter. And the solid connection of the torque converter shaft to the flywheel was redesigned with the result that bearing



High bending-type loads on a crankshaft will usually result in a break which starts in the fillet and progresses through the web.



◄ Improper shimming (described in text) caused this crankshaft failure. The crankshaft broke, as shown, the cylinder block cracked and the rear faces of all the main bearing caps and supports in the block were gouged because of a great forward thrust on the crankshaft.

▼ Torsional vibration fractures are characterized by a break at a 45 degree angle, usually toward the rear of the engine.

and crankshaft failures were eliminated.

Improper Shimming

Improper shimming caused several thousands of dollars damage to another new engine on a drilling rig. In this case, the engine was driving through a coupling into a torque converter and the torque converter was driving into an air clutch. The coupling between the engine and the torque converter was not properly shimmed to allow the crankshaft to float. Instead, the crankshaft was pushed forward with great force.

The result was that the rear flange of the rear main bearing was broken off completely. The engine was run to destruction as the crankshaft broke through the web adjacent to the rear main bearing. The cylinder block was cracked through the rear bearing web and the rear faces of all the main bearing caps and supports in the block were severely gouged because of the great forward thrust put on the crankshaft.

It was also found that the air clutch, fastened to the output shaft of the torque converter was grossly misaligned which, in all probability, was responsible for complete failure of the torque converter.

Type of Failure Tells Cause

Various physical and metallurgical analyses can be employed to determine if a particular crankshaft failure was caused by manufacturing defects. The type of failure also tells a lot about the cause and gives clues helpful to correcting the problem and preventing recurring failures.

Typical failures:

1. Side loads on the crankshaft can break down the oil film in the bearing, causing seizure. High end loads on the crankshaft not only can score the thrust surfaces of the bearings, but can generate enough heat to reduce the bearing clearance to the point of seizure. Continued running will usually result in a jagged, complete crankshaft fracture near the fillet.

2. High bending type loads, usually from misalignment of driven machinery, can start a crack in the fillet at the main bearing journal which progresses through the web to the adjacent rod bearing journal.

3. Torsional vibration normally fractures a crankshaft at a 45 degree angle. The wide use of torsional vibration dampers keeps this type of failure to a minimum. However, the damper can become overloaded because of added driven equipment or the damper can become damaged. Overspeeding may introduce additional torsional vibrations that can be damaging.

Modern, heavy-duty diesel crankshafts and bearings are not usually manufactured with defects. Failures are usually the result of external forces created by conditions beyond the control of the manufacturer. Physical and metallurgical tests can show whether or not the engine builder is at fault.

MAINTENANCE SERIES
NUMBER 7

Cutting Maintenance Costs in The Refining of Groundwood Rejects

The author discusses maintenance of the whole rejects refining system from screens to throat screws, as well as the heart of the system, the refiner itself.

R. B. Collier,
Service Manager,
Sprout, Waldron and Co., Inc.

There has been a great deal of discussion concerning the layout and planning of rejects refining systems, and there can be no doubt that the selection of proper equipment and intelligent installation of this equipment have an important bearing on the overall cost of maintenance. But, the maintenance superintendent has to live with the problem as he finds it. It is the purpose of this article to discuss the individual unit machines and auxiliary equipment items involved in a groundwood rejects refining system. We will attempt to discuss each unit from the viewpoint of what might be done to get longer life and avoid breakdowns.

Heart of System

The heart of the rejects refining system is, of course, the disc refiner. Both double runner and single runner refiners are in use and good arguments can be advanced in favor of both types. From the mechanics' viewpoint, however, the single runner refiner is preferable due to its lower maintenance requirements, relative ease of servicing and generally greater mechanical simplicity. In addition to the refiner, the rejects refining system must have equipment for screening, conveying, draining, storing and feeding.

Let us first take an overall look at the process. The pulp coming from the grinding stones will contain stock of varying shapes and sizes impractical to process in a disc refiner. This stock is removed at the bull screens and put through a hammer mill or crusher before going to the rejects refining system. The bull screen accepts to the fine screens. The fine screen accepts to the paper machines and fine screen rejects to the reject chest. In some plants equipment is installed to process rejects as they are produced rather than storing and metering from reject chests. This is not normally considered good practice in that the refiner is required to treat the rejects at constantly varying rates. Reducing the variables and controlling the feed rate helps produce more uniform quality refined pulp and is much easier on the equipment. By removing the irregularities of feed from the process, the system need not be designed for handling peak loads. This permits the use of smaller units since there is no need to take care of surges such as arise when the reject load is handled "on stream."

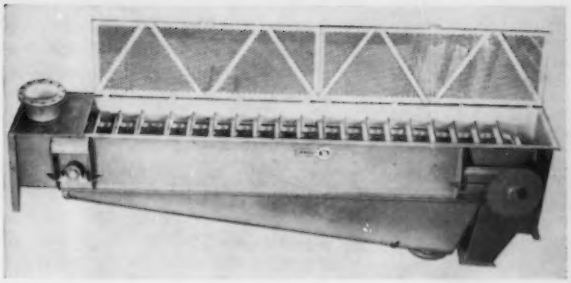
From the storage chest the rejects are pumped to consistency regulators or directly to a head or weir box so that the flow can be metered to a drainer. In some installations, the drainer is placed directly over the refiner with the idea of minimizing conveying equipment between the drainer and the refiner.

From the drainer the thickened rejects are usually conveyed to a metering device that proportions off a controllable volume of the rejects to the refiner. A continuous recycle is maintained in the conveyor and returned to the rejects chest. An attempt is sometimes made at the refiner to secure 100 per cent accepts, but in most cases, it is considered best to screen after refining and to arrange for recycling of the unacceptable stock.

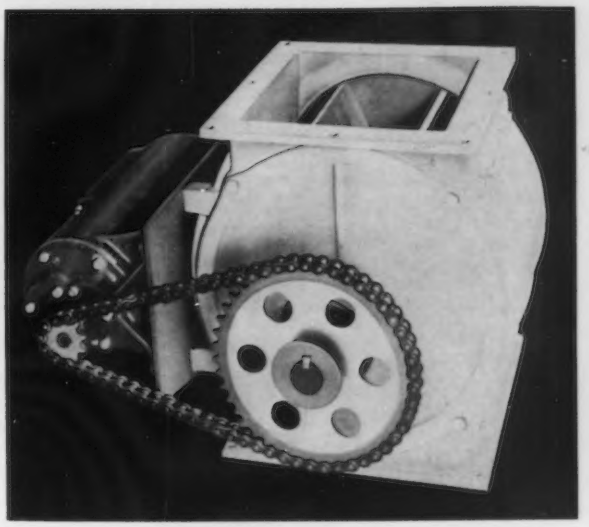
Low Cost Maintenance

We have already stated two extremely important factors in low cost maintenance. The first is the selection of quality equipment. The second is intelligent planning and layout of the system itself. The third is the maintenance department itself. When we speak of the maintenance department, we are thinking of (a) the personnel; (b) the program; (c) available equipment and supplies.

No maintenance department can function in a practical sense without a crew of trained and willing or disciplined mechanics. These men are entitled to competent supervision. And, this supervision must have the ear of plant management. When a maintenance department operates without respect and understanding of the importance of their work, costs mount proportionately. It would be our recommendation that the mainte-



Drainer—Regular inspection of drag arrangements, return guides, chain drives, and screen plates is recommended.



Rotary vane feeders require close check on ► clearance to insure operation with minimum power.

nance superintendent sit in on all discussions for new planned systems and equipment. In this way, they can "lock a lot of stables before the horse is stolen."

The maintenance program itself has been the discussion of many articles in the trade magazines. Almost all of these point to the importance of maintaining accurate records so that past experience can serve as a guide. Planned preventive maintenance programs and coordinated inspection routines both pay dividends in terms of increased equipment life and efficiency, with less equipment "down time."

Equipment and Facilities

Basic to an efficient maintenance department is an adequate store of spare parts. To maintain sufficient spare parts while at the same time avoiding excessive inventory, requires a constant study of parts used, constant review of obsolete supplies and accurate record keeping. Smart storeroom operations can uncover and reduce unnecessary maintenance costs which may be caused by the selection of inferior materials or the use of equipment not suited to the job. A good storage department can thus cut many hours off the down time of production equipment.

Unit Machines

Manufacturers spend hundreds of thousands of dollars each year in the preparation of operating and maintenance manuals for their equipment. The first rule of a good maintenance department is thorough reading of these manuals when a new piece of equipment is to be installed. The all too common attitude of some maintenance departments—that they are above following instructions furnished by the manufacturer—should be fought by plant and maintenance management. The manufacturer is not always right, and actual operating experience with a piece of equipment may dictate certain variations from his recommendations; but in setting up and operating or repairing a piece of equipment with which the mechanic is not completely familiar the manufacturer's suggestions are your best bet. This brings up another sore point. All too often, the expensive and carefully worked out instruction manuals furnished with the equipment are carefully filed in the office of the purchasing agent or the plant manager and never made available to the man responsible for the continued economical operation of the machine. With these thoughts in mind, let us look at the specific equipment items involved in a typical rejects refining system.

Screens

Because screens typically operate in wet conditions, it is important that motors be protected from moisture. Bearings should be supplied with the proper amount of lubricant on a planned cycle. All too often major breakdowns occur either from a failure to apply the right lubricant at the right time or from the application of an excessive amount of the lubricant. A completely informed lubrication section in the maintenance division of a large company pays for itself many times over. Faulty lubrication is one of the major sources of machine failure.

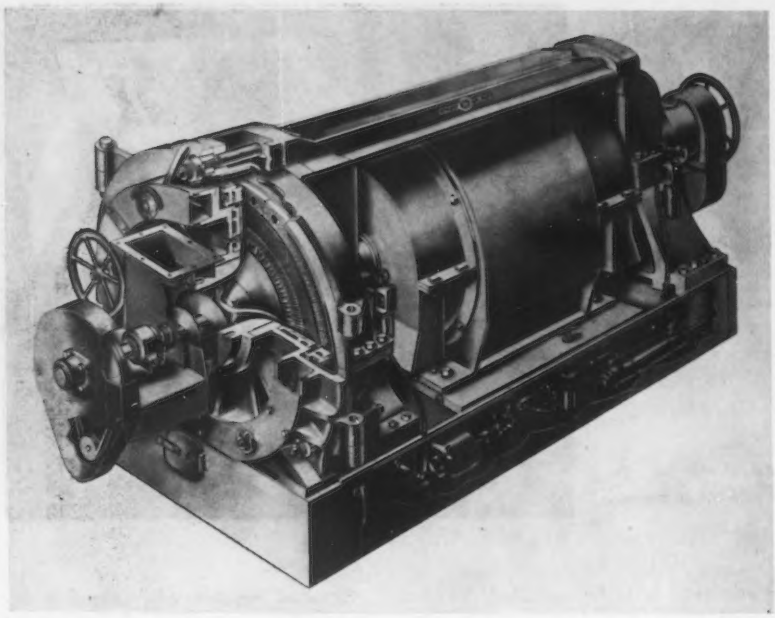
Screens require adequate foundation and support. Part of the regular inspection program should include examination of the foundation and supports for areas of potential failure caused by corrosion. Particularly in the vibratory screen types we must be careful that the unit is secure and there is no tendency to develop independent motions which may damage the entire unit. Careful attention to drives is a must.

Hammer Mill

The hammer mill or crusher installed to handle the bull screen rejects requires regular lubrication plus routine inspection of hammers, grinding plates and screens. Hammers must always be maintained in a balanced condition and care should be taken to see that the location of the individual hammers in the cylinder is not changed. Before startup of a mill in which hammers have been changed, it is important to double check to be sure that they are safely secured in the mill. Should any excess vibration be noticed, it should be investigated thoroughly and in a hurry before some loose or worn part is carried away to cause excessive and costly damage. For good service life it is important that magnetic protection against tramp iron be used.

Drainer

In some systems where refining is carried on at low consistencies, the drainer may be eliminated. Where drainers are used, however, it is important to locate it so that in the event of flooding the effluent does not shower over equipment. It is par-



Cut-away view of single disc refiner shows bearings and lubrication system. Throat screw mounted on front of refiner requires maintenance of packing glands, bearings, belt drive.

ticularly important that electrical equipment be protected from possible showering. There has been considerable discussion concerning the orientation of screens in the drainer. Since the screens are perforated by a punch, the hole will be somewhat larger on one side than on the other. It has been our experience that the side of the screen from which the punch entered should be uppermost in the drainer. By keeping the smallest diameter on top, the tendency to screen plugging or blinding is reduced. The drainer screen should logically have some slope to it with the discharge end higher. The drag speed should be adjusted to prevent the space between the drags being completely covered with stock in the last third of the length. The drive should be arranged so that the tension is on the loaded chain and the return guides should be inspected periodically to see that wear is not excessive. The drags themselves should be maintained to prevent excessive pressure on the screen as well as to move the stock along without leaving a deposit on the screens. It is important that the drive shaft sprockets be positioned so that the stock does not accumulate in the gullets.

The tail shaft may be equipped with sprockets, in which case (where the drags are carried by two chains) one tail sprocket must be loose on the shaft. An alternative is smooth flange wheels, but stock accumulation on these may be excessive. It may be necessary to provide showers to keep the wheels clean, just as it may be necessary to provide showers to keep the gullets clean should stock tend to accumulate in them. If stock is permitted to build up on the wheels, the chains will become progressively and uncontrollably tighter which puts an intolerable strain on the equipment.

Statements were made previously that there is a danger of a drainer overflowing on occasion and drowning the refining equipment below. This is another reason for locating the drainer so that a screw conveyor is necessary to get the stock to the metering device. The conveyor should be arranged so that it carried the stock from the drainer over the inlet or inlets of one or more metering devices, depending upon the number of refiners in the system. Rotoflow feeders or uniflow feeders with variable speed have been used for this metering. The latter has been found the most economical.

Feeders

Rotoflow (rotary vane) feeders require some initial attention to see that clearances are such as to permit operation without excessive power. In view of the relatively close clearances they should be fabricated from corrosion and abrasion resistant material. During installation, caution should be exercised to make certain there is no strain on the case of the feeder that might cause distortion. The drive should, of course, be protected from excessive moisture and the bearings lubricated according to standard practice. Rotoflow feeders normally have a variable speed drive which requires regular and careful lubrication and maintenance in accordance with the manufacturer's instructions.

When a uniflow feeder is used there are usually packing glands and a variable speed drive to look after. The screw should be installed so as to prevent a jamming of the mechanism in the event the stock should fail to get away under the feeder. Possibly the simplest answer to this is a hinged cover at the discharge end that will raise in the event the stock does not properly get away from the feeder and backs up. The hinged cover, when equipped with a tip switch can be arranged to either signal the condition or take automatic action to prevent damage. The feed to the drainer should be sufficient to guarantee that there is always an overflow at the last metering device. This assures that the metering device is always running full and thus feeding the refiner at a constant rate. When possible, the overflow should be spouted back to the rejects chest. If this is not practical, screw lifts or pumps may be used. It is considered good practice to provide magnetic protection between the feeder and the refiner. Usually this takes the shape of a spout magnet, preferably of a bent leg design that causes the stock to flow over two magnets. These magnets can be equipped with signaling devices to indicate when they are well loaded.

Throat Screws

The design of the double runner refiner makes it desirable to use a

stock consistency that will uniformly flow into the refiner, without a force feed mechanism. Single runner refiners, due to their unrestricted inlet, will give uniform power usage with high consistency stock.

In the event that a throat screw is used the relative simplicity of the device does not bring on any particular maintenance problems. The small electric motor that drives the screw should be interlocked in a manner to prevent operation of the screw unless the refiner is running. Standard throat screws as furnished by reputable manufacturers are sized and driven at a speed proportional to the volume of stock handled. Care should be taken to set the speed so as to prevent slugging. Low speed may drop the material into the refiner in slugs and excessively high speeds can cause slugging by throwing the stock back up the spout until heavy charges are accumulated.

The throat screws on a single disc refiner is a device to put heavy stock into the refiner and is not an effective meter. Metering should be performed by the previously described devices. Actual maintenance of the throat screw consists of keeping the packing glands in order, routine lubrication of the bearings and normal attention to the belt drive. The motor should receive the regular inspection and be mounted in a manner which satisfactorily protects it from moisture.

Single Runner Refiners

Single runner refiners are equipped with a variety of thrust bearings and are usually lubricated with a fluid oil system which senses the flow of the oil and shuts the refiner down if the oil flow falls below a preset minimum. It is essential that this equipment be set up exactly according to the detailed instructions that accompany it. Operated as intended, the lubrication system is quite effective and the design is sound. Troubles experienced are invariably due to some departure from design conditions.

PLATE CLEARANCE

The single disc refiner offers simplified access to the plates when changing and an equally simple method of tramming or maintaining the parallelism of the plates which is essential to efficient operation. Control of the plate clearance is by screw thread adjustment, that while basically simple, requires occasional inspection to make certain that no slack has developed. The slack in this adjustment usually develops from shock loads on the refiner or from improper reassembly if some other maintenance activity has required its removal. Again, this is a point where careful study of the instructions furnished with the machine and compliance with these instructions will eliminate any problem.

Trouble-free operation of a single runner refiner can be secured with no more attention required than to see that plate seats are clean before new plates are mounted, that plates are mounted carefully per instructions packed with them, and that feed of stock to the refiner is regular and within the capacity of the equipment. These machines are often equipped with synchronous motors and require routine attention to the control equipment. Care should also be taken to see to it that the motor has access to reasonably clean dry air. Rotor excitation should be proper to avoid excessive temperatures. Should a synchronous motor driven refiner suddenly develop a vibration which disappears with shut off of power, begin by checking the resistance of the rotor coils.

VIBRATION

Vibration or variations in vibration are one of the most significant symptoms of trouble. These machines when properly installed run very smoothly. Inadequate foundation, particularly when accompanied by pulsating feed, will develop some very eccentric and undesirable vibrations. The foundation must be adequate and the feed must be steady.

Occasional shock loads due to tramp iron or careless operation which permits the refiner to run with plates in contact with each other may cause plates to crack or even break. Should there be any indication that plates are cracked or that tramp iron has entered the refining area, the unit should be shut down immediately and opened to determine the trouble. If the runner is backed off the refiner while it is running, it is quite possible that the loose plate or foreign objects will get into a position where excessive damage can result. This problem can be entirely avoided through reliable feeding, thorough operator training and due precaution against the entrance of tramp iron.

SHOCK LOADS

In the event that plates are broken and the refiner does sustain a heavy shock load, the plates should be removed, tension release bolts at the tail of the machine inspected, the runner checked to see that it is perpendicular with the shaft and properly secured, and the surface of the runner and swinghead plate seats thoroughly smoothed up. It is standard practice to install these refiners so the material discharges from the refiner directly into a chest or header that goes to the chest. During plate changing, it is possible for any tool, nut or bolt to be dropped into the system. To avoid this, a single runner refiner can be connected to the chest or hopper by a stone trap in the manner that any undesirable material such as this would be caught at a point where it can be easily removed. In installations where this is impractical, it is necessary that a plug be available for insertion in the connection between the refiner and the chest or header and this plug be in position when changing plates.

Double Runner Refiners

The double disc refiner with its two rotating discs operates under somewhat different conditions from the single runner and has its own set of problems. Bearings are typically greased packed and can be a problem if for any reason there is a tendency toward high operating temperatures. As usual, the manufacturer's recommendations should be followed and specific problems reviewed with them. Precaution should be taken when operating the double disc design at close plate clearances to avoid any failure to feed which will result in damage to the plates.

Most of the double runner mills in operation are equipped with hydraulic equipment to advance and retract the runner. A basic precaution in view of the type of bearing used, is not to move the shaft axially unless the shaft is rotating. Explicit instructions are furnished with the hydraulic equipment and should be studied and complied with.

DANGER OF TRAMP IRON

The spoked runner necessary with this design to get the stock between the plates makes it necessary to exercize extreme caution against the entrance of tramp iron. If there is any indication that tramp iron has entered or that the plates are loose or broken, the mill should be shut down immediately and then opened for inspection.

Changing plates in a double disc mill is a bit more of a chore in view of the restricted work zone and no tramming facilities are provided. Tramming is accomplished by shifting the motor and wedging the frame. As with the single head mill, it is important to check to be sure the runners are perpendicular to the shaft, parallel with each other and secure on the shaft.

How Are Your Public Relations?

This check list will not only help to evaluate your company's public relations but it will help clarify what they should cover.

Paul Lockwood

Some business men think of public relations in much the same way as they do their fire station . . . to be called when there is an emergency. Public relations—good public relations—is preventive medicine . . . not the doctor or the undertaker.

What is public relations?

Even today public relations is a mystery to many management people in the paper industry. Some, for instance, consider it a high science. Others think of public relations as printed publicity. Actually, public relations is just good common business sense in the way a paper company conducts its business with the public. The things you and your employees do molds public opinion—good or bad —about your paper company.

You cannot go out and buy a pound or a yard of public relations. It is not for sale. You and your organization must create it. You must plan it. And, you must work on it to make it a success.

Here is a check list of the elements that go into making a successful public relations program for a paper company. Check each of the points listed that you can honestly answer with an "unqualified" yes. Then, add up your check marks, multiply by two, and you will have your score for your firm's present public relations.

The unchecked questions will point the way to developing a more successful public relations program for your paper company.

Public Relations Check List

Civic Responsibility

——Do you belong to organizations in your community in each of these classifications — church, lodge, service club?

——Do you take an active part in at least one of these organizations of which you are a member?

——Are you a strong supporter of programs designed for the civic betterment of your community even though there is no personal gain involved?

——Do you participate in the recognized worthy charity drives in your community?

——Do you contribute your business know-how, facilities, and time to make every civic enterprise a success?

Personnel Relations

——Does your salary and employee benefit program compare favorably with other employer's plans in your community?

——Do you take a genuine and a sincere interest in your employees and in their problems?

——When it is necessary to discharge or layoff an employee, do you explain the situation carefully and completely to the worker?

——Do most of your advancements to better positions in your organization come from within?

——Do you keep all of your employees informed about the goals, problems, and position of your firm all the time?

Business Correspondence

——Do you answer all letters you receive as promptly as possible?

——Do your business letters have a pleasant, friendly tone that gives a true impression of your firm?

——Do you personalize your letters so that the person receiving the letter does not feel "you say that to everyone?"

——Is there anything in your letters that might have a different meaning than the one you intended?

——Does the physical appearance of your letters create the kind of impression you want people to have of your paper company?

Telephone Technique

——When answering the telephone, do you have a "smile" in your voice?

——Do you introduce yourself and and give your firm identification when answering the telephone?

——Do you make it a point to get your caller's name when you start talking on the telephone?

——Do you personalize your telephone conversation by using the caller's name while talking?

——Do you always answer your telephone calls as promptly as possible?

Advertising Attitude

——Do all of your advertisements fit into the character you want to create for your firm?

——Are your advertisements prepared in good taste to give people a feeling of confidence in your company?

——Do you avoid the tendency to knock your competition in your advertising?

——Do all of your advertisements have some means of identification for your business?

——Do you avoid any misleading or semi-true advertising that will be a business boomerang?

Printed Publicity

——Do you know the publisher or editor of your local newspaper personally?

——Do you keep your newspaper informed of any personal or business activity that is newsworthy?

——Do you avoid the tendency to be a "publicity grabber" for any little thing that happens?

——Do you refrain from complaining about the amount of publicity you receive in comparison with other businessmen?

——Do you give the common place publicity about your paper company a different twist to make it more interesting?

Handling Complaints

——Do you make every effort to handle all complaints and adjustments promptly?

——Are you fair in all settlements offered to your customers about their complaints?

——When you are at fault, do you quickly shoulder the blame instead of grudgingly making an adjustment for the customer?

——Do you live up to the spirit as well as the letter of all agreements you make with your customers?

——When dealing with a "chronic complainer" are you fair, but firm?

Vendor Relations

——Do you make it a point to see and examine all lines of every salesman calling on you?

——Do you treat visiting salesmen as friends rather than as business enemies?

——Do you avoid any criticism of the lines being presented by the salesmen?

——Do you offer suggestions that might lead to some improvement in the line or the service?

——Do you avoid all sharp-trading practices such as asking for unusual terms, and special discounts?

Creditor Relations

——Do you pay all invoices as promptly as possible within the dating allowed?

——Do you take only the discounts allowed on the invoice instead of misinterpreting the terms or datings?

——Are you fair in seeking credits and adjustments for the materials, supplies and equipment you receive?

——Do you re-check carefully on any errors that seem to indicate a difference in invoice amount and the amount actually received?

——When it is necessary to delay payment of an invoice for some reason, do you inform the vendor of the situation?

Credit Accounts

——Do you explain all your rules and regulations about your credit plan to your customers when the account is opened?

——Do you handle poor credit risks in a tactful manner to avoid any ill will with other customers?

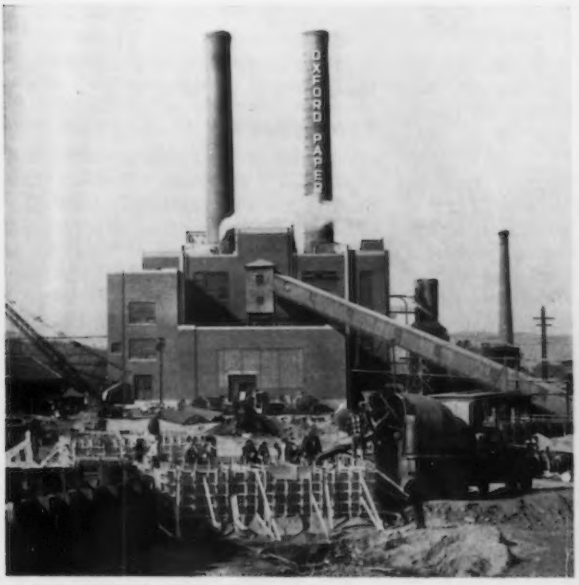
——When obtaining credit information from a customer, do you make sure that the questions you ask are not embarassing?

——When following-up over-due accounts, do you have a system that still holds the good will of these slow paying customers?

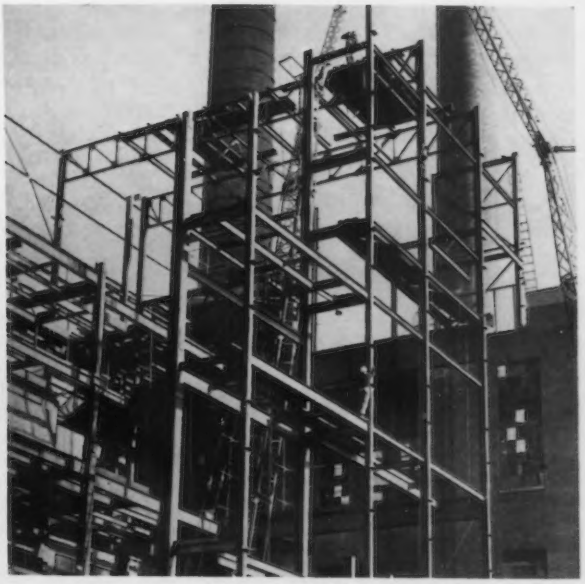
——Do you give your customers every opportunity to make some plan of settlement before taking drastic action of your collection methods?

These fifty questions will give you a cross-section of your paper business's public relations program. All are important to the future success of your business and all have a bearing on the opinion the public will have of your paper company. By applying good common business sense to any areas that show a weakness, you can improve your public relations in your community.

Construction Progresses at Oxford's Rumford Mill



POURING CONCRETE PILE CAPS for foundations to hold the new 320 foot long lime kiln building.



STEEL FRAME for the chemical recovery building for the new kraft pulp mill at Oxford's Rumford, Maine, plant.

MULTIWALL bags are made with water-resistant paste. At delivery end of Coty tuber, bags are stacked and transferred to Coty bottomer on opposite side of the room.

It's Simple to Make Special Adhesives for Special Bags

George Richmond, Arkell and Smiths

Clyde D. Woodburn, Corn Products Sales Division

Numerous special adhesive requirements pop up to face the manufacturer of specialty bags. Glossy papers make excellent bags, with high consumer appeal, but they are difficult to paste. White bags enjoy a preference in food uses, but they usually require pure white adhesives to preserve the desired whiteness — especially in the bag seams. Glassine liners seal in flavors and also seal out moisture; but, again, they present special adhesive problems. Novel closures must stay firmly in place and must be applied at high production speeds when used on smaller bags—as is generally the case. This requires a fast-setting paste of high solids content. Water resistant paste is necessary in cases where bags may be exposed to the elements, and water resistance in pastes means a fast-setting, high solids formula. Flat bags, made from thin, colorful, papers are fashionable; but the seams tend to wrinkle if pastes dry too fast or are too fluid. Colored paper also dictates the use of a non-alkaline paste.

At Arkell & Smiths, Hudson Falls, New York, where millions of specialty bags are produced annually, all these adhesive problems have been encountered and solved with paste formulas that require a minimum of adhesive raw materials and have maximum flexibility.

One of the world's largest manufacturers of flexible small bags and multiwall packaging containers, Arkell & Smiths, is currently celebrating two important events in its long history. The company has recently completed an expansion and consolidation program designed to bring all its facilities together in one efficient operation at Hudson Falls. Simultaneously, A. & S. is celebrating "100 Years of Progress in Packaging" after a century of leadership in its field.

New Equipment

As part of its modernization and expansion program, Arkell and Smiths has just installed a new air-knife coater for coating papers used in the manufacture of dog food, flour and corn meal bags. This new piece of equipment is replacing three older machines and enables A & S to produce a highly controllable, high gloss finish for crisp, bright bag printing up to 120 line screen. Another large six color web fed letter press has recently been put into operation in a new wing of the Hudson Falls plant. This is the second six color press added in the past year to the existing large battery of presses.

The 60 bag machines located in the Hudson Falls plant make bags ranging in size from 1¼ in. x 3⅝

NEW air-knife coater has just been installed. Most A. & S. bags have glossy finish for fine color printing. Gas dryer is in background.

in. sterile needle bags to 100 lb. multiwalls. A large part of Arkell and Smiths' production is in bags for flour, dog food, rose bushes, miscellaneous chemicals, pies, surgical dressings, ice cream sandwiches, cookies, sugar, potatoes, and institutional mixes.

Paper and Bag Machines Used

Most papers used by Arkell and Smiths are glossy to assure good printing results. A special super calendered 50 lb. white kraft paper is used in large quantity to produce coffee bags. Glassine and vegetable parchment are used as liners and grease barriers. Kraft paper of 40, 50, and 60 lb. basis weight, natural and bleached, is used to make multiwall bags, potato bags, etc. Some special papers such as Clupak are also used in the multi-wall department to produce bags to meet special customer requirements.

Bag machines at the Hudson Falls plant are of various types. Some of these are modern versions of the original Arkell bottomer and other paper bag machines developed or improved by James Arkell. Bag machines by Potdevin, Weber, Stillwell, Richens and other machine makers are used for various specialty bags. In the multi-wall department a Coty and a Weber tuber, several bottomers, and a double-ender produce bags up to 53 in. wide.

Adhesives for all these machines are bucket fed—except in the case of the multi-wall machines, where pumps convey paste from drums to the tubers and bottomers.

Four Starch Products

Four starch products made by Corn Products Co. provide the basis for Arkell and Smiths' paste formulas for water resistant seam, spot, and bottom paste for coffee bags made from special super-calendered white kraft and glassine papers, spot paste for tin ties, and seam adhesive for flat and square bags.

Each of the starch ingredients is carefully selected for special adhesive qualities that suit it to the application. One of these is a blended starch product, one is a borated dextrine, one is a British gum, and the other is a regular pearl starch.

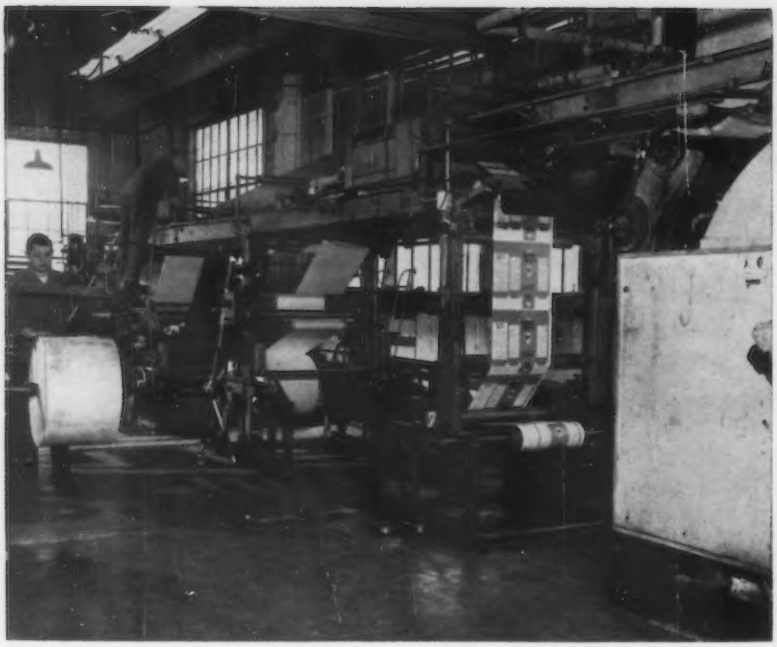
Any bag adhesive must, of course, be of the right consistency so that it does not throw, spatter or string when in use on high speed machines. It must not discolor the paper and it must tack fast enough to permit high speed operation of the machine. Certain other characteristics are also required of special-purpose pastes. One example at Arkell and Smiths is water-resistance of adhesives used in the manufacture of multi-wall bags.

Starch-Resin Pastes

Perfecting of dependable, low-cost, water-resistant formulations is one of the most important adhesive advances in recent years. Before the development of present water-resistant pastes, borated dextrines were generally used. These were later replaced by sodium silicate, starch and dextrine combinations, which were followed more recently by the general type of blended starch-resin formula used now by Arkell and Smiths. Besides excellent water resistant characteristics, which enable bags to be submerged far beyond the required 24 hours (in test cases as long as a week), these bottom, seam and spot pastes exhibit a highly uniform and stable viscosity. This means prolonged storage life and improved machine operation. Another advantage is the greater uniformity provided, in the case of the starch blend No. 7211, by pre-mixing. Corn Products carefully controls the proportions of the blended product during manufacture of the compound. This expedites paste making for the bag manufacturer and assures him of a uniform product.

Globe Brand Corn Starch No. 7211 is a pre-blended mixture of low solubility, which exhibits excellent paste characteristics, together with good wet-strength performance when mixed with resin. The special starch blend also has another important function in that it increases the solids without thickening the paste excessively. Since the finished paste must be acidic for the resin to cure, No. 7211 is slightly acid.

The low viscosity of the No. 7211 blend makes it highly compatible with the corresponding low viscosity urea formaldehyde and most other



PRINTERS at A. & S. print up to six colors on 120 line screen. Another new six-color press is being installed as part of expansion program.

resins used for developing water resistant pastes. No. 7211 makes it possible for the paste to achieve and hold proper viscosity and fluidity; and it gives extra bite and tack required for high machine speeds.

Selection of Starch Critical

In making a urea formaldehyde water-resistant paste such as the one used at Arkell and Smiths, the selection of starch is critical. The degree of degradation or modification of the starch determines the ease with which it and the resin will combine. If the starch degradation or modification by hydrolysis has been only slight, the free hydroxyls will be fewer and the easier it will be to render the starch insoluble, and the amount of resin required to produce a waterproof paste will be less.

However, the starch must be sufficiently modified or hydrolyzed to achieve desirable flow characteristics in the finished paste. During preparation, the cooking causes the starch to gelantinize, increasing its viscosity. Since it is mainly the starch which determines the paste viscosity, it must be sufficiently modified to prevent it from becoming too thick during cooking.

To develop water resistance in the adhesive soon after it has been applied, a salt catalyst is an important part of the adhesive formula. Actually, the effective catalyst is the hydrogen ion.

The greater the concentration of hydrogen ions or the lower the pH, within certain limits, the faster polymerization will occur. Increasing the temperature is also an effective method for increasing curing speed. But, with faster polymerization comes also a reduction in the potlife of the adhesive because, of course, it thickens more quickly to the point where it cannot be properly applied.

It is essential, therefore, to balance the rate of development of water resistance against the rate of increase of viscosity.

Preparing Water Resistant Paste

The Arkell and Smiths' formula and procedures for preparing one of their water resistant pastes is as follows:

600 lbs.	Globe brand starch No. 7211
1200 lbs.	Water
60 lbs.	Urea formaldehyde
39 oz.	Soap chips
8 oz.	Defoamer

The paste is prepared in one of the seven cookers on the ground floor of the plant. The use of direct steam in the one 300 gal. tank reserved for the manufacture of waterproof paste prevents it from burning or baking onto the inside of the cooker. Unlike the other six tanks, the one used for the preparation of the water resistant paste is also provided with a jacket of cooling coils so that the batch can be quickly dropped to 130° F. after cooking. The fast temperature drop is essential to prevent the urea formaldehyde from dumping and flaking.

In preparing the paste the operator runs in about 20 in. of water at 65° F., turns on the agitator and then adds the neutral soap. The soap helps produce a paste that is smoother and has less tendency to gelatinize. Since it does have the effect of thinning out the paste the amount to be added must be carefully calculated. After the soap, the 600 lbs. of No. 7211 starch blend is added gradually. Next, 60 lbs. of urea formaldehyde is blended in in powder form. The batch is heated to 195-200° F. in about one hour's time and after the addition of 16 oz. of defoamer, is held for 10-20 minutes. If necessary, the pH is then adjusted with alum. The paste must be slightly acidic for the proper curing to take place. The pH should be between 6.0 to 7.0. This range is limited on the lower side by pot life considerations. If the paste is too acidic its pot life will be appreciably shortened; if it is too alkaline water resistance will be affected adversely. Working life at the proper pH is three days.

The amount of water in a finished batch of paste, including steam condensate, is approximately 1200 lbs.

The urea formaldehyde resin is, of course, the ingredient in the formula that is primarily responsible for the finished paste's water resistance. It combines with the starch and appears to change its redispersing characteristics. Starch is essential to the formula, not only for its adhesive qualities, but because it reacts with the resin and the result of this reaction produces a water resistant paste. It has the happy advantage of being low in cost and is also responsible for eliminating the friable characteristics of polymerized urea formaldehyde resin film. Water resistance seems to be the result of copolymerization of urea formaldehyde resin with the starch blend.

Development of Water Resistance

How water resistance actually develops during curing is not known. Starch and urea formaldehyde resin both possess hydroxyl groups and are therefore somewhat similar in char-

acter. It is assumed that the resin reacts with the free hydroxyls in the starch to block these groups so they cannot absorb water. Free formaldehyde from the resin would also act to block the hydroxyl groups and help make the starch insoluble. It is also possible that as the resin cures it forms a protective coating over the less water resistant starch particles. Again, water resistance may be partly attributed to the reversion of starch to its water insoluble state.

What ever the combination of causes, starch blend No. 7211 and resin, when properly cured by acidity developed by catalyst action, form an adhesive that is stronger after soaking than the paper surfaces it unites. To be acceptable to Arkell and Smiths a water resistant paste must pull more than 50 per cent fibers across the entire paste strip after drying 5 days and then being soaked in water for 24 hours.

The above Arkell and Smiths' formula has great versatility and is used for seams as well as bottoms and for special kraft paper. The only difference in the finished pastes is in their solids content. As given above, the formula will make a paste containing 25 per cent solids, and is used as a bottom paste. It exhibits good flow characteristics, is short, has resistance to squeeze and possesses excellent tack. It has a binding time of about 8-10 minutes on 50 lb. natural kraft. To make seam and spot paste, sufficient water is added to reduce the solids to approximately 22 per cent. The additional water is added after the paste is cooked and in that way helps drop the temperature to the required 130°F. in less time than for the bottom paste.

For Clupak paper, 15 per cent of fine particle size clay, based on total solids, is added right after the soap to raise the solids content to approximately 40 per cent. The clay holds the water on the paper surface and prevents wrinkling.

Role of Borax

Coffee bags manufactured by Arkell and Smiths consist of an inner ply of glassine and an outer ply of 50 lb. super calendered white paper. The adhesive developed for the coffee bag seams is also used as a spot paste for tin-ties and non-water resistant multi-wall bags, and flat and square bag seams. This formula has for its main adhesive ingredient a blend of dextrine and borax prepared by Corn Products as Globe brand starch No. 7222. The borax is blended with the dextrine before it is bagged or shipped in bulk to give the paste more tack, especially into such products as glassine and glossy papers. The borax also permits better viscosity adjustment. A slight additional amount of borax is added by Arkell and Smiths to increase further the body and tack of the paste.

CREATIVE art department suggests crisp, eye-catching layouts for all types of industrial and consumer-product bags, from hypodermic needle size to multi-wall.

Borax is one of the most useful of the additives presently employed in the preparation of starch adhesives. Its effect on a starch (or dextrine) and water mixture is caused by complex chemical changes that take place when the borax comes in contact with the free hydroxyl groups and the free water in dispersion. When introduced into a starch, dextrine, or gum slurry borax forms a certain amount of free dihydrotetraboric acid. The association of the dihydrotetraboric molecules with some of the free water, and/or the joining of the starch or dextrine molecules with borax, through hydrogen bonding, produces entirely new chemical combinations that increase the viscosity and bonding characteristics of the paste.

The amount of free water is greatly reduced, raising the viscosity far out of proportion to the amount of solids actually added to the dispersion. By the addition of borax it is possible to reduce the solids content of a paste formula containing starch or dextrine to an appreciable degree and still obtain high viscosity and faster tack. It is assumed that the reduction of solvent or free water in the borated adhesive mixture is responsible for the faster tack. The slightest loss of water in the paste is sufficient to change the hydrosol into a hydrogel. The instantaneous loss of water when the paste is applied to paper is sufficient to trigger this change.

The amount of borax required to accomplish the desired viscosity and tack varies with the type of base. Starch requires less borax than dextrines or British gums to increase viscosity. Too much borax produces a paste that cannot be spread smoothly, is rubbery, and has little tack.

Coffee Bag Seams and Bottoms

The formula of Arkell and Smiths for coffee bags seams, tin/tie and special flats and squares is:

900 lbs. Globe brand dextrine No. 7222
1875 lbs. water
9 lbs. borax
5 lbs. preservative

The high solids content of this paste, approximately 33 per cent, prevents throwing at high machine speeds. A particular characteristic of No. 7222 that suits it to these applications is that it can be easily used at such high solids. Speedy drying and excellent tack are characteristic of this particular paste. When

used on flat and square bags of especially thin paper, this formula exhibits good lay-flat characteristics.

A special Corn Products formula has been in use for some time by Arkell and Smiths exclusively on coffee bag bottoms. There are three starch ingredients in the paste, a Globe brand British gum, No. 9014, tapioca dextrine, and Globe brand pearl starch, 3001. The dextrine is used to give the paste tack and because it facilitates viscosity adjustment, as mentioned in the paste seam description above. No. 9014 is a low solubility gum. Its viscosity at normal solids gives a sufficiently thick paste for bottoming operations and, at the same time, it gives excellent penetration and tack due to its natural characteristics as a gum. When mixed with pearl starch the results are more body, heaviness, and shortness required for bottoming of the relatively heavy glossy papers and glassine used in Arkell and Smiths' coffee bags.

Bag Testing

Routine tests run on papers at Arkell and Smiths include tests of basis weight, tear, mullen, sizing, and grease resistance. In addition, each bag order is thoroughly tested by the quality control department. In special cases orders are tested at frequent regular intervals during manufacture. Routine runs of bags are checked twice a day; others more often. Tests include dropping, sifting, water resistance, and checking of the seams and bottoms to determine the holding quality of the paste being used under pressure and excessive heat.

Drop tests are performed on small bags from a height of 24 in. where they are let fall on their butt ends. The filled bags must be able to withstand three falls without bursting. On multi-wall bags of 25, 50, 80, and 100 lb. capacity the fall is from 48 in. on the bag's face or back, or 24 in. on its butt end.

In testing the resistance to sifting, bags are shaken and the seams and bottoms checked for leaks or porosity. For testing salt bags, Arkell and Smiths uses a Syntron vibrator. In each test performed upon a bag, the bag is filled with the product it will contain when in use by the customer. Salt bags are tested with salt, cement bags with cement, fertilizer bags with fertilizer and so on. This is done to make certain that the bag not only measures up to theoretical standards, but will also measure up to the standards it will have to meet in actual use.

Prices of Fibers

MARKET WOOD PULP

FIRST QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$ 82.50/ 90.00	§$90.00/ —	§$80.00/ —	§$90.00/ —
Bleached Gw'd	$ 97.50/100.00	$ 97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	§157.00/162.50*		§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		§137.00/ —		
Kraft, Semi-bleached.	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡150.00/155.00	‡150.00/155.00	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	§47.00/150.00	160.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances.
‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED JANUARY 12

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	$7.50/ —	n.a.
3	$7.00/6.00	$8.00/7.00	7.00/6.50	n.a.
4	6.00/5.25	6.25/5.75	6.25/5.25	n.a.
5	5.25/4.75	5.50/5.00	4.75/4.50	8.50/7.00
6	4.75/3.75	4.75/4.50	4.00/3.25	6.50/4.00
7	3.75/3.25	4.00/3.00	3.00/2.50	4.00/3.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

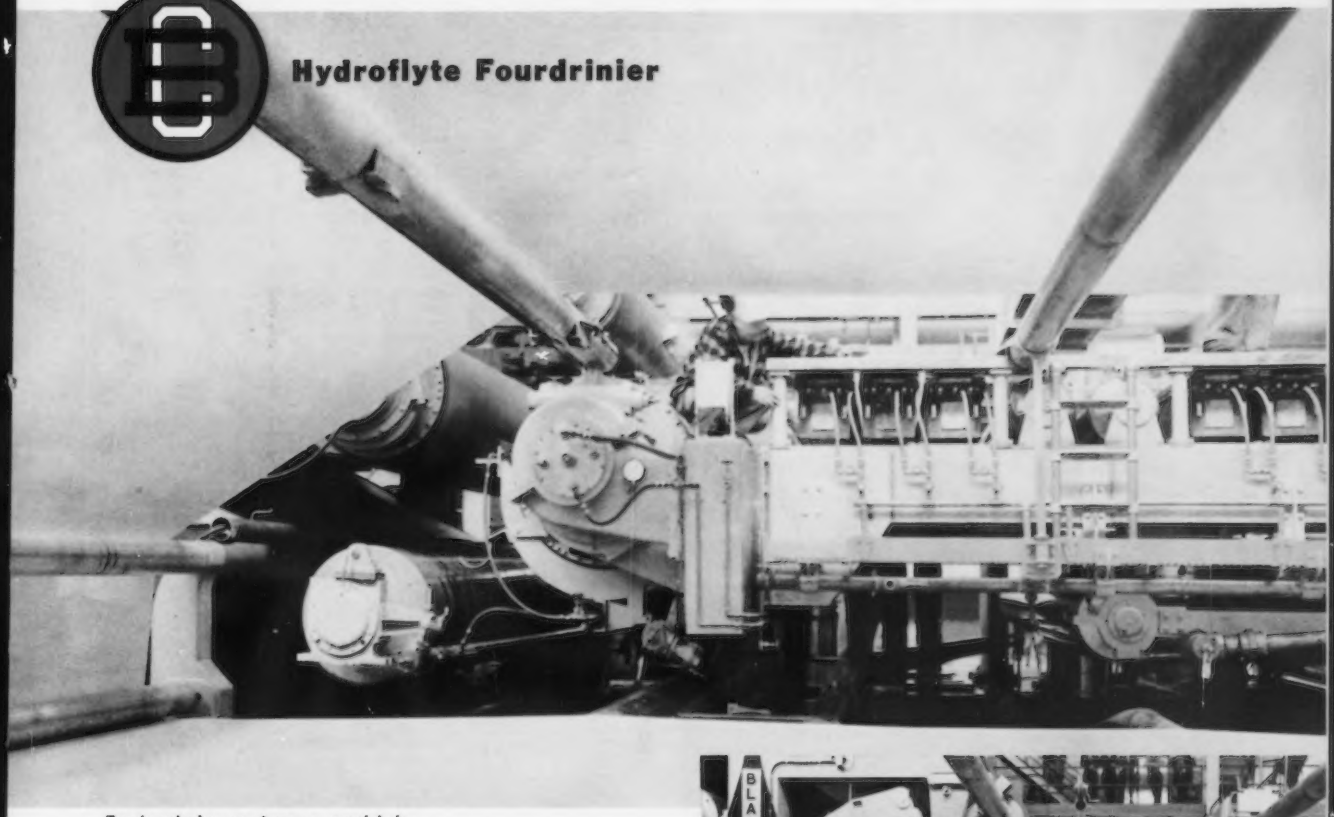
	New York	Boston	Chicago	Los Angeles
	Jan. 18	Jan. 18	Jan.	Jan.
No. 1 Mixed Paper	$ 7.00/ 9.00	9.00/ 11.00	9.00/ —	13.00/ 14.00
No. 1 News	14.00/ 15.00	14.00/ 15.00	16.00/ —	16.00/ 15.00
Overissue News (Lg. size)	13.00/ 15.00	13.00/ 15.00	21.00/ —	19.00/ 20.00
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	14.00/ —	15.00/ —
Old Corrugated Containers	22.00/ 23.00	21.50/ 22.00	21.00/ —	23.00/ —
Super Assorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	35.00/ —
New Double Kr. Ld. Corr. Cuts	32.50/ 35.00	35.00/ —	32.50/ —	35.00/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	30.00/ —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	24.00/ —	35.00/ —
White Newsblanks	62.50/ 65.00	53.50/ 60.00	45.00/ —	60.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	60.00/ 65.00	60.00/ —	70.00/ —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White Env. Cuts	100.00/105.00	105.00/110.00	90.00/ —	113.00/ —
Col. Tab. Cards	50.00/ 52.50	50.00/ 52.50	52.50/ —	42.50/ 45.00
Manila Tab. Cards	70.00/ 72.50	70.00/ 72.50	75.00/ —	70.00/ —
No. 1 Col. Ledger	40.00/ 45.00	37.50/ 42.50	45.00/ —	31.00/ —
White Ledger	60.00/ 62.50	60.00/ 65.00	55.00/ —	45.00/ —
Mixed Book & Mag.†	22.00/ 25.00	— / —	15.00/ —	— / —
No. 1 Books‡	22.00/ 24.50	17.00/ 19.00	32.50/ —	17.50/ 19.50

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

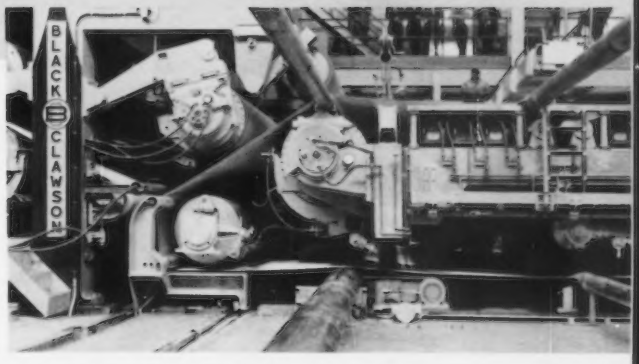
Why Dismantle and Move 125 Tons of Precision Fourdrinier

when it's easier to move a few hundred pounds of wire?

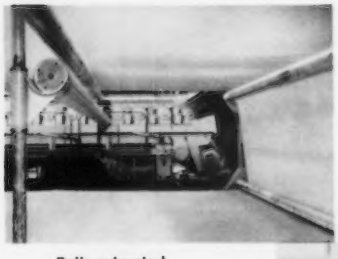
Hydroflyte Fourdrinier



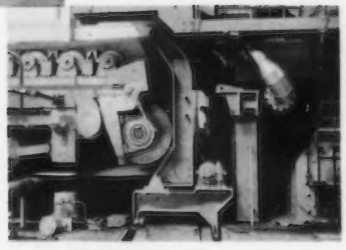
Tensioned wire pre-strung on special rig in aisle alongside Hydroflyte Fourdrinier



Wire is quickly pulled on cantilevered Fourdrinier by winch and cable.



Rolls retracted



Wire in place

Doesn't it make sense to change the wire as quickly and safely as possible? With the Black-Clawson Hydroflyte Permanent Cantilever Fourdrinier you eliminate costly downtime. Suction, air, water, power, saveall, shake and drive connections **are not disturbed in any way.** Positive alignment and precision adjustments are maintained always. Another reason why papermakers who demand the best come to

The Black-Clawson Company
Paper Machine Division, Watertown, N. Y.

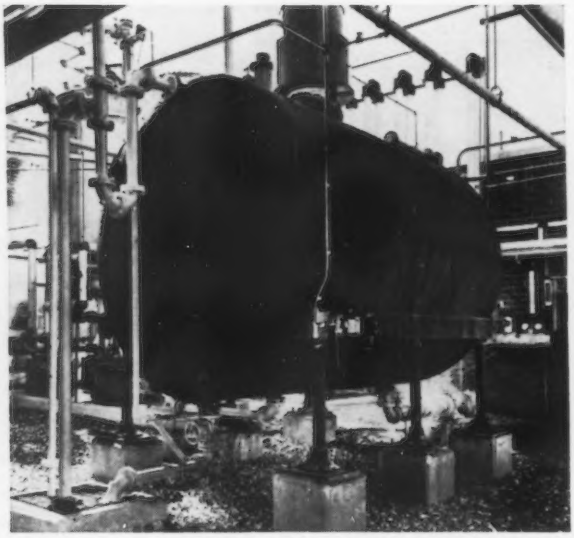
Another Advanced Engineering Design

BLACK-CLAWSON

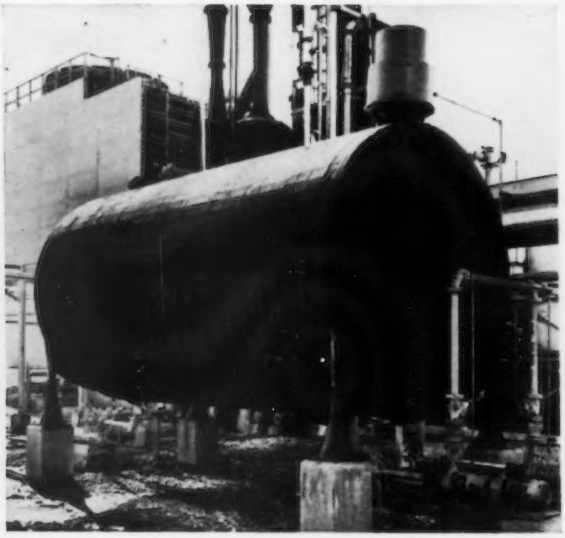
FLUIDICS

is a new PFAUDLER PERMUTIT program that provides a modern, imaginative approach for handling and processing more profitably the liquids and gases involved in such operations as:

corrosioneering	flow rate control	pumping	metering
water treatment	heat transfer	reactions	valving
waste treatment	fluid analysis	agitation	piping
		blending	storing



Waste liquors, highly corrosive, are accumulated in Glasteel at Marathon Southern in this 5000-gallon Glasteel Chemstor tank.



15,000-gallon storage tank of Glasteel construction keeps chlorine dioxide safe and pure until it's ready for use.

FLUIDICS AT WORK

How Marathon Southern uses Glasteel in chlorine dioxide generation

One of the major factors to consider in setting up a chlorine dioxide plant is the corrosiveness of chlorine dioxide itself and of the chemicals used to generate it.

Depending on the process you use, you run up against sodium chlorate, sulfuric acid, methanol, and sulfur dioxide.

One construction material is completely resistant to all and any combination of these chemicals . . . Pfaudler Glasteel.

That's why you'll find Glasteel equipment so much in evidence at Marathon Southern's new chlorine dioxide plant. This single material from one fabricator solves *all* the corrosion problems encountered.

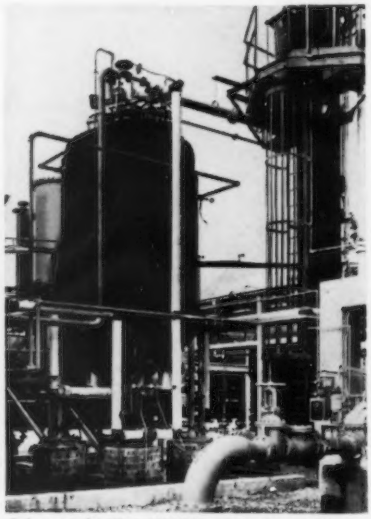
More than 35 pulp mills are now using Glasteel equipment for everything from generators to storage tanks and towers, from pumps and pipes to fittings and valves.

If you're considering a new chlorine dioxide plant or expanding or revamping an old one, take advantage of Glasteel, the modern material of construction for ClO_2 equipment, provided by our FLUIDICS program. You can get a complete analysis covering original prices, maintenance costs, and length of equipment life simply by contacting your Pfaudler representative.

Or write direct to our Pfaudler Division, Department PT-10, Rochester 3, New York.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes



Primary chlorine dioxide generator at Marathon Southern. Five-ton-per-day capacity. Like most of the chlorine dioxide equipment at this installation, it's corrosion resistant Glasteel.

By the
PENOBSCOT RIVER
OLD TOWN, MAINE

PENOBSCOT PULPS

Soda · Softwood Sulphite · Hardwood Kraft

Chlorine Dioxide Bleached

MILLS AT OLD TOWN, MAINE

PENOBSCOT CHEMICAL FIBRE COMPANY

Market Wood Pulps Since 1882

211 CONGRESS STREET
BOSTON 10, MASSACHUSETTS

Telephone: LIBERTY 2-3870

PJT NEWS OF SUPPLIERS

General Electric Co. has named L. T. Jester, Jr., manager of the newly established Process Machinery Industries Sales Unit in the company's component and intermediate distribution sales department. The department is a part of the Apparatus Sales Division.

In his new position, Mr. Jester will be in charge of sales to machinery manufacturers in such fields as pulp and paper, textiles, plastics, testing, food, packaging and wrapping and foundry equipment.

Mr. Jester has been with General Electric since 1941 when he received his Bachelor of Science degree in electrical engineering from the Massachusetts Institute of Technology.

Southern Chemical Cotton Co., Chattanooga, Tenn., announces that effective immediately prices on Bleached Cotton Linter Pulp will be increased. The prices that will prevail will be $12.70 per 100 lbs. for Bleached Second Cut Linter Pulp in sheets and $12.45 per 100 lbs. for Bleached Second Cut Pulp in bulk form, both delivered.

This information came through the offices of Castle & Overton, Inc., exclusive sales agent for Southern Chemical in the paper industry.

Whiting Corp. has named George F. Lytle manager of the newly formed Pressuregrip Division.

"Pressuregrip" is the brand name of a new vacuum lifting system for materials handling, recently announced by Whiting. It is adaptable for overhead crane handling, or can be custom engineered to perform many other automatic and semi-automatic materials handling operations.

Stone & Webster Engineering Corp. has promoted William C. Pittam, project engineer in charge of work on expansion of the Georgia-Pacific pulp and paper mill at Toledo, Ore., to consulting engineer.

Mr. Pittam joined Stone & Webster in 1955 after working for Weyerhaeuser Timber Co., and has been engaged in the design and construction of pulp and paper mills. A native of Spokane, he attended Oregon State College and the University of Oregon.

Expansion of the Georgia-Pacific mill at Toledo, Ore., which will virtually double its capacity by bringing daily production to a total of over 600 tons, is scheduled for completion in mid-1960.

C. C. Nolan

J. D. Power

Hardinge Co., Inc., York, Pa., has named Charles C. Nolan western district manager. The Hardinge western office, headed by Mr. Nolan, is in San Francisco, Calif. He succeeds R. L. Baldwin, retiring district manager, who will continue to act in a full-time capacity, retaining an office at Hardinge San Francisco headquarters, 24 California St.

Jack D. Power has been named central district manager for Hardinge, with headquarters at 205 West Wacker Drive, Chicago, Ill.

Crane Co. has announced plans to final approval by Swartwout stockland manufacturer of electronic control equipment. The move is subject to final approval by Swartwout stockholders on January 11.

PAPER TRADE JOURNAL is always mailed on Friday at East Stroudsburg, Pa. If you feel that there is undue delay in receiving your copies, we suggest that you write to your local postmaster with a copy to S. E. Marsh, assistant postmaster at East Stroudsburg. If you will also send a copy of your complaint to us this will keep us posted on areas of poor service.

Buell Engineering Co., Inc., New York, producer of electrical and mechanical dust collecting equipment, has purchased the 49 year-old Northern Blower Co. (Norblo) of Cleveland, Ohio, according to J. A. McBride, president.

Under terms of the acquisition, L. A. Eiben will operate The Northern Blower Division of Buell as a vice president within the framework of the Buell organization. Norblo manufactures bag-type dust collectors and filtering equipment.

According to Mr. McBride, "With the acquisition of Norblo, Buell will be able to offer its customers a complete range of products and systems to handle every industrial dust or air-pollution problem." The company's line of equipment now includes cyclones, electric precipitators, low-draft loss and bag-type collectors. In addition, Buell will continue to produce centrifugal and gravitational dust classifying systems.

Thwing-Albert Instrument Co., 60-year-old Philadelphia firm, announces the election of John Fachet as vice president, manufacturing; Ralph E. Green, vice president, technical sales and quality control; and Charles A. Paul, Jr., as secretary.

Pioneer Paper Stock Co., Chicago, Ill., has appointed Harry C. Lisk resident manager of its operation in Kalamazoo, Mich. Mr. Lisk is a native of Kalamazoo and has spent many years in the paper stock industry.

Harry C. Pearson remains an officer of the company as well as Michigan division manager supervising both the Detroit and Kalamazoo operations.

Red-Ray Mfg. Co., Inc., Cliffside Park, N. J., announces that Selas Gas & Engineering Co., Ltd., City Road, Manchester 15, England, has been licensed to manufacture and sell Red-Ray Infra Red Gas Burners in the United Kingdom and Europe.

Timken Roller Bearing Co. has appointed R. L. Frederick to the new position of executive director—International Division. Mr. Frederick will be in charge of coordinating Timken's international operations. He will report to H. E. Markley, executive vice president. Initially, Mr. Frederick will be mainly concerned with manufacturing in overseas locations, giving special emphasis toward coordinating methods and programs designed to produce quality products with the greatest efficiency.

Yale Materials Handling Division, The Yale & Towne Manufacturing Co., has promoted Gerald A. Tamblyn, formerly manager of industrial tractor shovel sales development, to assistant general sales manager, industrial trucks.

Mr. Tamblyn joined the Yale sales organization in 1957 when the Materials Handling Division entered the industrial bulk handling field through the development of a 2500 pound capacity industrial tractor shovel unit. Yale industrial tractor shovel sales will now be directed by Robert L. Brown, head of an expanded gasoline powered materials handling equipment department.

G. A. Tamblyn

W. G. Dedert

Whiting Corp., Harvey, Ill., has named Philip F. Gray, Jr., and Thomas R. Elmblad managers of its Boston and Cleveland district sales offices, respectively. Mr. Gray moves to his new position from the sales staff of Whiting's New York domestic office and Mr. Elmblad from the Pittsburgh office.

J. A. McGlone has been appointed sales manager of Whiting's Trambeam Overhead Material Handling Systems. He moves from Chicago sales to the home offices at Harvey.

B. L. Heinen, formerly of Whiting's Houston office, has been transferred to Chicago. Mr. Heinen joined Whiting in 1950 in the sales training program.

R. A. Rogers has been transferred from Chicago to Whiting's Charlotte district office. Mr. Rogers joined Whiting in 1957 as a sales trainee.

William G. Dedert has been named manager of research and development of Whiting's, Swenson Division. Mr. Dedert joined Swenson in 1946 after graduation from Rose Polytechnic Institute. He is succeeded as manager of the pulp and paper department by J. N. Brown, formerly of Swenson's Chicago sales office. Mr. Brown, a graduate of Purdue University, joined Swenson in 1950.

M. J. Beagle, formerly of Swenson's Houston office, has been transferred to the sales force of the Chicago office. He joined Swenson in 1950. Mr. Beagle is a graduate of the University of Illinois.

J. F. Peter has been transferred from the Harvey home office to the Swenson Houston office. Mr. Peter, a graduate of Illinois Institute of Technology, joined Swenson in 1956.

L. F. Kapp has been transferred from the Swenson home office to join the sales staff of the Seattle district office. Mr. Kapp joined Swenson in 1946. He is a graduate of Indiana Technical College.

Rohm & Haas Co., Philadelphia, has announced changes in the official staff, made at a special meeting of the board of directors, called at Otto Haas' request on December 31.

F. O. Haas, son of the founder, was elected president of the company and chairman of the Executive Committee of the board. Dr. Haas, who has been executive vice president since 1953, has been a member of the Executive Committee since 1951, and a director of the company since 1948.

Ralph Connor was elected chairman of the board. Dr. Connor will continue as a member of the Executive Committee and as vice president in charge of research of the company —a position which he has held since 1948.

John C. Haas, also a son of the founder, was elected vice chairman of the board, replacing Dr. F. O. Haas in that capacity. He is also a vice president of the company and a member of the Executive Committee.

Elliott Co., Jeannette, Pa., has appointed John E. Smet, its New York office assistant district mangager. An electrical engineering graduate of the University of New Hampshire, he has also studied at Harvard and MIT.

Since 1946, Mr. Smet has spent 12 years with one of the nation's largest industrial manufacturers, and his sales experience includes all industries products such as turbines, motors, pumps, and generators.

Harbison-Walker Refractories Co., Pittsburgh, announces that its new refractories plant at Fulton, Mo., is now in full production, making a broad line of monolithic refractories. Products of the new plant, developed and established over the years, include more than 20 types of castables ranging from lightweight to high-alumina; 15 to 20 types of molding media for optimum sizings for various metal moulding mixtures and other sized granular materials; a

AVAILABLE FOR PROMPT SHIPMENT

T.B.P.

(Tributyl Phosphate)

• *Tankcars*

• *Tanktrucks*

• *Drums*

IMPORTANT USES:

ANTI-FOAM AGENT

TBP is one of the most efficent chemicals for preventing undesirable foaming in—

THE
1. Manufacturing Process
2. Can Filling Operation
3. Final Application

OF
1. Synthetic Resin Emulsions (paints, etc.)
2. Paper Coating Compounds
3. Adhesives
4. Inks
5. Textile Sizings
6. Detergent Solutions
7. Many Other Systems

WITH
1. Low Cost (in one application as little as one-drop in a one-pint can before filling with a resin emulsion gave 20% more cans per minute than before.)
2. Practically no residual odor.

SOLVENT METAL EXTRACTION

TBP is widely used for the solvent extraction of certain metals and rare earths. At present, in this field, the largest use is associated with the atomic energy processes both in the initial preparation of the ores and the recovery of spent reactor fuels. Our TBP meets the AEC specifications.

OTHER USES

A high boiling solvent for most natural gums and synthetic resins for lithographic inks, etc. TBP is a recommended solvent with excellent blending power for preparing concentrates of 2-4D acid.

TBP is non-corrosive, non-flammable, with a pour point of <—80°C. and a vapor pressure of only 7.3 mm. Hg at 150°C. These properties suggest its use as a functional fluid for a variety of applications: such as a heat transfer medium.

MAY WE SUGGEST you also investigate KP-140 (tributoxyethyl phosphate) as an anti-foam agent.

FOOD MACHINERY AND CHEMICAL CORPORATION

Chemicals & Plastics Division

161 East 42nd St., New York 17, N. Y. Dept. PTJ

number of high temperature cements and high temperature bonding mortars; as well as mullite and flint grains for ceramic shell molds.

New concepts and improvements in equipment and layout are providing a degree of precision in screening and batching of materials never before attained in products of this type. Dry cements and high temperature bonding mortars, castables and other monolithic-forming refractories are manufactured here in a closely controlled operation.

J. J. Davis

Electric Steel Foundry Co., Portland, Ore., has named Jefferson J. Davis, formerly vice president in charge of ESCO's product divisions, executive vice president.

Mr. Davis has been with ESCO for nearly 24 years. He joined ESCO-Seattle as office manager on February 24, 1936. He served successively as manager at ESCO-Eugene, manager of logging, sawmill, crushing and construction equipment divisions. In September, 1954, he was promoted to vice president in charge of product divisions.

A native of Clarkston, Wash., Mr. Davis was graduated from Washington State College in 1932 with a degree in business administration and accounting.

Wyandotte Chemicals Corp. announces the promotion of Carl T. Lenk and David J. Craig in its Research Division, and appointments of John U. Wolter and Robert M. Lawrence in the Michigan Alkali Division.

Dr. Lenk has been promoted to manager, chemical research, in the contract research department. In this capacity, he is responsible for the technical management and supervision of research and development contracts outside of the propellant field. Mr. Craig has been promoted to manager, propellant research, in the contract research department.

Mr. Wolter has been named assistant manager of the industrial organic chemicals department for the Michigan Alkali Division. He joined Wyandotte in 1951 in the process engineering department and prior to his transfer to field sales, was supervisor of the control laboratory. His most recent post with Wyandotte was as resident sales representative in the western district.

Mr. Lawrence has been appointed resident sales representative for the Michigan Alkali Division. Assigned to the company's western district headquarters in Chicago, he will be located in Kansas City, Mo., and his territory will include Missouri, Oklahoma, Kansas and Colorado.

Food Machinery and Chemical Corp. has appointed Robert A. Bondurant, Jr., manager of the Chlor-Alkali Division. Before his appointment, Mr. Bondurant was resident manager of the division's soda ash facility near Green River, Wyo.

After joining FMC in 1936, Mr. Bondurant served in production and process supervisory positions at FMC's largest chemical plant at South Charleston, W. Va. He transferred to the New York office as plant representative in 1951, a position he held until becoming assistant to the division manager in 1955.

Mr. Bondurant became special projects manager for the division in 1956. Among his responsibilities were FMC's experimental mining project at Green River and its recently completed salt mining operation at Bens Run, W. Va. He then served as production manager for the Chlor-Alkali Division immediately before managing the Green River soda ash plant. He is a graduate of Virginia Polytechnic Institute.

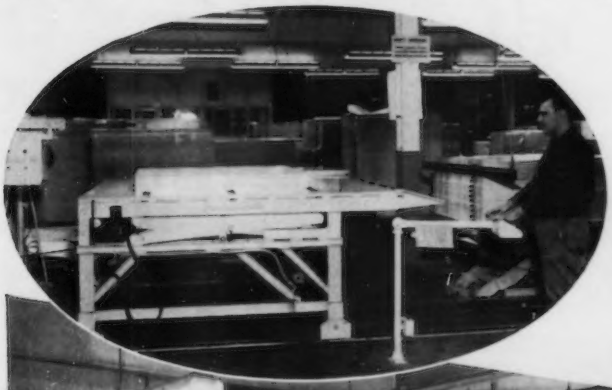
FMC's Chlor-Alkali Division produces chlorine, chlorinated solvents, caustic soda and caustic potash, ammonia and the rocket fuel Dimazine® at its South Charleston, W. Va. plant, and soda ash from trona at its Green River mine and processing plant.

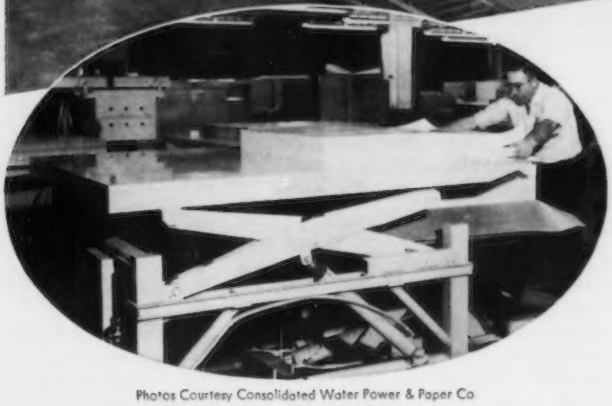
The Glidden Co., Cleveland, Ohio, has appointed Walter H. Vastrick to the sales staff of its Chemicals-Pigments-Metals Division in Baltimore. Mr. Vastrick's appointment is the result of the Chemicals-Pigments-Metals Division's stepped-up marketing activities and expansion of its sales force in order better to serve the growing demand for titanium dioxide and other products.

A 1948 graduate with a Master of Science degree from the University of Michigan, Mr. Vastrick was technical director of the Hawthorne Paper Co. prior to joining Glidden. Before that he had filled several supervisory posts with the Allied Paper Corp. and had been associated for eight years with the St. Regis Paper Co. as assistant production manager at its Kalamazoo, Mich., plant. Mr. Vastrick will be headquartered in Kalamazoo.

"Better keep Flintley away from the cooking liquor."

HOW SOUTHWORTH STRADDLE TABLES* *increased production* AT CONSOLIDATED





Photos Courtesy Consolidated Water Power & Paper Co

The highly mechanized layout illustrated actually increased trimmer output by 150% . . . for by its simplification the feeding of untrimmed paper and the piling of trimmed paper were expedited, enabling the trimmer to operate nearer to capacity.

This is another typical example of how a Southworth installation aids in cost reduction by a better use of existing facilities, by minimizing waste through better handling and by the improvement of safety conditions for the workers.

SOUTHWORTH MACHINE CO. since 1890

*Patents Pending

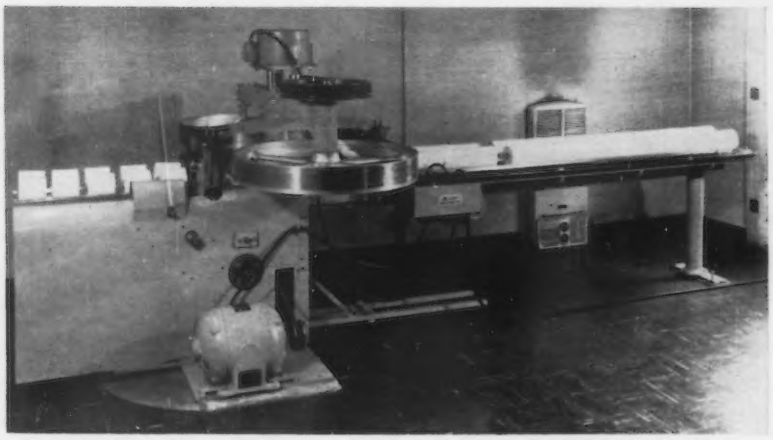
For Details Write or Call Collect:

SOUTHWORTH MACHINE CO.

127 WARREN AVENUE, PORTLAND, MAINE, SPruce 4-1424

Mfrs. of Paper Conditioners; Automatic Skid Lifts; Lift Tables; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabbing Knives and Corner Cutters plus Custom Built Equipment.

NEW EQUIPMENT & SUPPLIES



Double-Cutting Roll Tissue Automatically

The Du-Cut Automatic Band Knife, is engineered for production of roll tissue and other products, by the "log-cutting" technique. The machine's patent-pending feature of cutting with both the power and return runs of the knife accomplishes a doubled production per machine cycle; a release mechanism prevents "scorching" even at high speeds. An "over-size" cam raises and lowers the counterbalanced cutting head. Another cam operates all eight work-holding elements or "clamps." The special knife is continuously sharpened, and may be adjusted for wear by the turn of a safely and conveniently located handwheel, even with the machine running at top speed. A knife may last as long as 500 operating hours, claims the manufacturer. To compensate for product variations, a master handwheel adjusts all eight product-holding clamps simultaneously. Clamps are also individually adjustable for precise "balance of action" upon the work, and are spring-mounted for safety. Balanced so that a sing'e "B" section belt drives the entire machine (except knife) at usual speeds, all parts are engineered to take much heavier loads at higher speeds. Additional information is available from James A. Ferris, Industrial Engineer, 712 Reid St., W. DePere, Wis.

Portable Debarkers For Sawlogs

The early successes of the Morbark portable pulpwood debarker has prompted the company to expand its line into two models of sawlog debarkers, reports the American Pulpwood Ass'n. in Technical Release 59-R45. The same debarking principle used in the pulpwood model (P-59) (see PTJ, 56, Sept. 14, 1959) is utilized in the log debarker series (LV-59 and L-59); i.e., a log is spun by two spiked wheels above a revolving, floating head equipped with replaceable carbide-tipped cutters.

Model LV-59 is mounted on wheels and is powered by a 37 h.p. Wisconsin gas engine. A 10-inch head will handle logs from 5 to 20 feet in length and 5 to 20 inches in diameter.

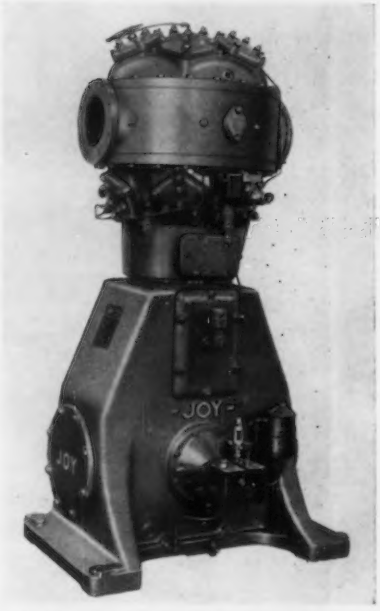
Model L-59, mounted on steel skids, is powered by a similar engine of 56 h.p. However, a water-cooled diesel or two Westinghouse electric motors may be substituted for the gas engine. Five to 20-foot logs, with 7 to 20-inch diameters, can be debarked by a 12-inch head.

Both machines are equipped with live infeed and outfeed rolls which can be detached when the machine is moved. The manufacturers, Morbark Portable Debarker Co., Winn, Mich., claims that production is efficient on both softwood and hardwood logs.

Adhesive System for "Non-Bondable" Teflon

An adhesive system has been developed for bonding "non-bondable" Teflon to itself and to other materials. Designated as PA-746 by the manufacturer the adhesive system is supplied in kit form. Each kit includes a treating agent which prepares the Teflon surface, plus a two-part bonding agent that cures in a few hours to form a high-strength adhesive joint.

With PA-746 it is claimed that any standard grade of Teflon or other fluorcarbon plastic may be employed, and personnel can fabricate the parts without special training of any type. Moreover, since the PA-746 Teflon treatment is restricted only to those surfaces that are to be actually bonded, there is little chance that the electrical or physical characteristics of the remaining Teflon surfaces have been compromised by the carbonization process normally used to make Teflon "bondable." For additional information, contact Plastic Associates, 185 Mountain Road, Laguna Beach, Calif.



THE VERTICAL, SINGLE-STAGE COMPRESSOR has been added to Joy Manufacturing Co.'s line of heavy duty air, gas boosting and oil-free compressors. The machine, WG-9H, has piston displacements from 633 to 1630 cfm with maximum pressures to 125 psi and horsepower ratings to 150. Write for Bulletin GG-5H, Joy Manufacturing Co., Henry W. Oliver Building, Pittsburgh 22, Pa.

What's the best way to bleach cold caustic pulp...

TOWER or REFINER?

Let Du Pont—the producer of both hydrogen peroxide and sodium peroxide—help you make this key decision

You may save thousands of dollars in capital investment and chemical cost if you make the right choice between bleaching in a refiner or in a tower.

Du Pont has a thorough working knowledge of both systems and, as the producer of both sodium peroxide and hydrogen peroxide, can tell you which peroxide or combination of peroxides is best for you.

Du Pont technical men will work with you and the equipment manufacturer of your choice to obtain the best peroxide bleaching process for your cold caustic pulp. They may recommend refiner bleaching requiring a small investment for peroxide solution make-up equipment with possible brightness increases of up to 20 points . . . or if your operation calls for it, they may recommend tower bleaching. When combined with Du Pont's acidification process and a peroxide treatment, tower bleaching can increase brightness up to 35 points.

Add Du Pont's experience to your own, and you're sure to make the right choice. Call your Du Pont representative; he will be glad to discuss any bleaching problem you may have.

MIDWEST AREA
Call P. E. Kiefer, Chicago, Ill. • INdependence 3-7250
WEST COAST AREA
Call L. W. Blight, Portland, Ore. • CApitol 7-1281
NEW YORK & BOSTON AREA
Call C. R. Lombard, New York, N. Y. • LOngacre 3-6440
SOUTHERN AREA
Call R. W. Hammond, Charlotte, N. C. • FRanklin 5-5561

DU PONT PEROXIDES

SOLOZONE® sodium peroxide • **ALBONE®** hydrogen peroxide
for better bleaching of groundwood—sulfite—kraft—cold soda

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

ELECTROCHEMICALS DEPARTMENT, E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON 98, DELAWARE

THE WHEELER ROLL CO.

EXPERIMENTAL

PAPER and COATING MACHINES

10 inches to 30 inches wide.

Variable Speeds

WHEELER ROLL CO.

Kalamazoo

LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS

- DOCTORS—BLADES
- HYDRAULIC OSCILLATION
- Jet Air FUZZ REMOVERS
- No Spit STEAM SHOWERS
- Self Cleaning SHOWERS
- FRESH WATER SHOWERS

Represented by

W. E. Greene Corporation, Woolworth Bldg., New York

C. S. Connington, Barre, Mass.

Buffalo Rubber & Supply Inc., 526 Niagara St., Buffalo 1, N. Y.

E. C. Jacobi—H. D. Wake—P. R. Bruce, 746 So. Quincy St., Green Bay, Wisc.

R. T. Barnes, Jr., 1523 Chapin Ave., Burlingame, Calif.

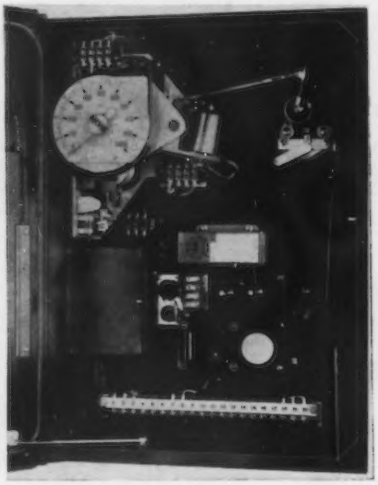
Pulp & Paper Mill Accessories Ltd. Box 903 Montreal, Quebec

E & M Lamort Fils, Vitry-le-Francois (Marne) France

Joseph Winterburn Ltd., Bury, Lancs., England

Transducer Measures Pressure, Liquid Level, etc.

Bristol's Dyna-Servo is an electronic transducer for converting a measurement of pressure, liquid



level, temperature, mechanical motion, etc., into a shaft position for operating transmitting slidewires, alarm switches, analog to digital encoders, deviation contacts, etc.

The electronic balancing system uses an amplifier to operate a balancing motor which provides torque for precise positioning of encoder, slidewire contact, or other device. The sensing element may be a capsular element, or it may be a helical element or a differential pressure unit. The motion transmitted from the sensing element through a linkage positions the core of a differential transformer. The coil is repositioned through a mechanical feedback system to return the electrical system to balance.

A pointer indicates the measured variable on a 3¾ inch dial. Remote readout can be had through the retransmitting slidewire. Standard accuracy is reported to be ±0.25 per cent of span.

Available attachments include: retransmitting slidewires, deviation detector for actuating digital transmission equipment, switches for alarms, and a multi-position range-change switch for changing slidewire resistance.

CHAS. T. MAIN, INC.
ENGINEERS
PROCESS STUDIES, DESIGN, SPECIFICATIONS, CONSTRUCTION SUPERVISION
PULP AND PAPER MILLS
STEAM, HYDRAULIC AND ELECTRICAL ENGINEERING
REPORTS, CONSULTATION, VALUATIONS
BOSTON, MASSACHUSETTS
CHARLOTTE, NORTH CAROLINA

Hinged Expansion Joints Make Pipe Lines Self-Supporting

Zallea Bros., 815 Locust St., Wilmington, Del., announce a hinged-type expansion joint for piping systems that eliminates the need for additional supports and reduces pipeline bending stresses.

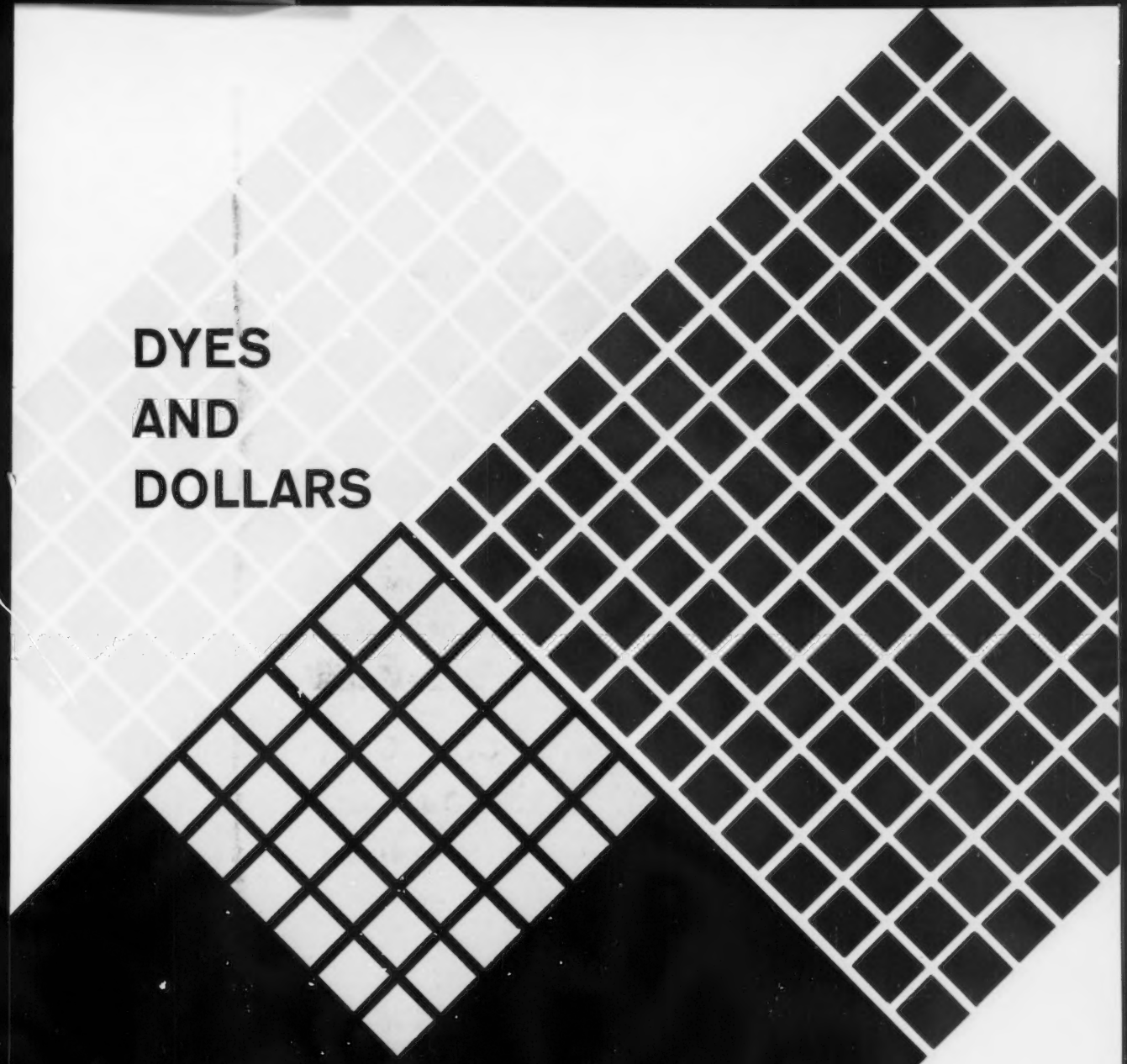
Shear loads can be carried by the hinged expansion joints which can also absorb piping weight, wind loads, and other dead loads without extensive anchoring. Bellows torsion is prevented and the resulting piping system is said to be more stable.

The standard model is designed to take rotation in one plane only. For this reason, these expansion joints are used in combinations of two or three. Slotted hinges are available for special applications where axial movement must be permitted, but these units do not absorb axial pressure thrust.

Three basic types are available to meet requirements of movement, pressure and temperature conditions. Their maximum angular rotations range from 5° for 3 inches diameter to 0.75° for 72 inches diameter. Special models are available for greater degrees of rotation.

A recommended safety measure for all installations is the addition of limit stops to ensure that the expansion joints will operate within the designed degree of angular rotation.

DYES AND DOLLARS



The Color of Money. Paper mills, like other businesses, are always on the lookout for ways to save money without sacrificing quality standards. In the past year CIBA Company Inc. has introduced "Paper-Proved" Dyes aimed at doing just this. Among these are: Direct Yellow P-CD, Direct Yellow P-RCD, Chlorantine Fast Blue P-8GLL.

Your inquiries are invited on CIBA "Paper-Proved" technical information, samples and color matching.

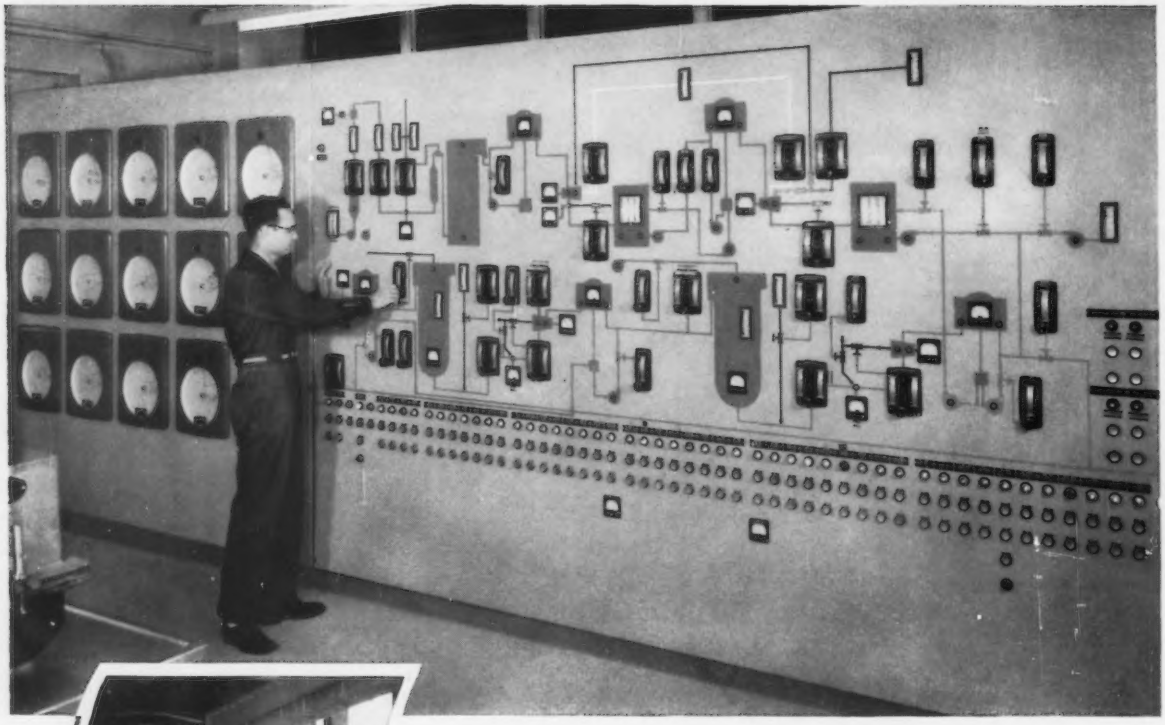
CIBA

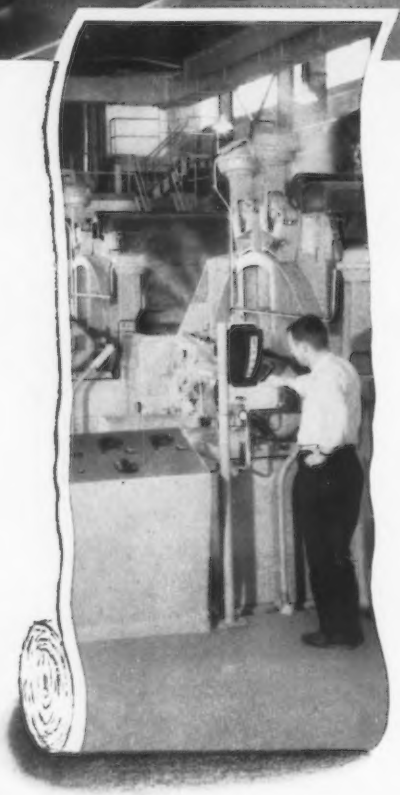
Direct Yellow P-CD
Direct Yellow P-RCD

Chlorantine® Fast Blue P-8GLL

All three are versatile dyes, recommended for bond, ledgers, mimeo, offset printings and specialty convertings. In addition, these dyes have excellent light-fastness and good fastness to acids, alkalis and water. Bleaching with hypochlorite permits the use of the broke in other light shades. Pleasing shades of blues, yellows and greens can be obtained for facial, toilet and napkin stocks.

CIBA Company Inc., Paper Chemicals Department
Fair Lawn, New Jersey





Photos courtesy Marathon Southern Corporation

Bailey controls Marathon's five-stage bleach plant!

Marathon Southern's five-stage bleach plant at Naheola, Ala., is one of the most completely instrumented in southern U.S.A.

Rigid quality control—automatic and foolproof—keeps production going at top speed with unvarying excellence in the finished product.

The panel board in the central control room (above) was built and instrumented by Bailey. Note how it is divided into two sections. The 15 Bailey Recorders in the recorder section provide continuous circular chart records. The functional graphic panel on its right provides a complete visual picture of the entire process. Important control variables such as stock consistency, stock flow, bleach liquor flows, stock temperatures, etc., can be watched and instantly corrected, either automatically or manually.

At the same station, the operator can supply consistency-controlled stock (from any of four storage towers) to any of the semi-bleach, pine bleach, or gum bleach pulp chests on a ratioed flow, automatically controlled basis.

Each of the five vat bleach washers is equipped with automatic level control (as shown at left).

This is but one example of how Bailey is helping pulp and paper processors to greater degrees of automation, efficiency, and quality control. Let your Bailey Engineer suggest applications to fit your operation. Or write for specific control systems information for your entire plant operation. P149-1

PULP AND PAPER DIVISION

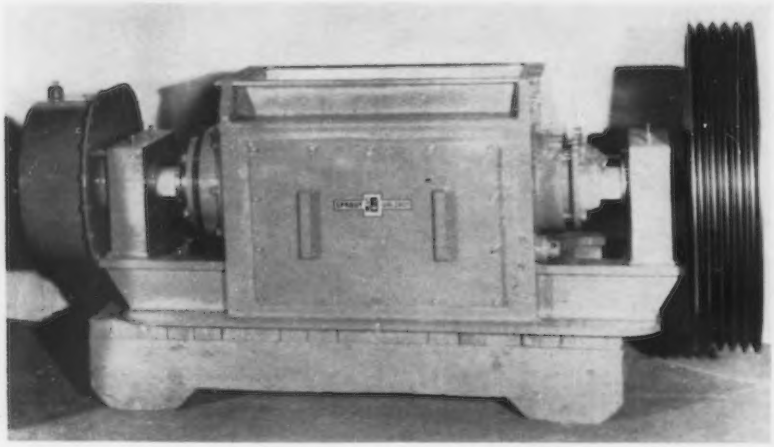
BAILEY METER COMPANY

1056 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

No matter what your product, process or problem involving white pigmentation, look to TITANOX® pigments and our technical service for the answer. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments Ltd., Montreal.

7539



Water-Tight Saw Tooth Crusher Handles Slurries

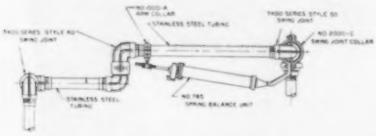
The development of a water-tight saw tooth crusher for handling a wide assortment of chemical slurries has been announced by Sprout, Waldron and Co., Inc. Built to withstand a 20-foot liquid head pressure, all bearings are outboard. The stuffing box for the shaft seal is extra heavy, and Neoprene gaskets are used around covers, inspection doors and other parts where leakage might occur.

Stainless steel tines are used as cleaning combs. These are mounted on a shaft and protected by a shear pin. Shear pin protection is also provided for the round, instead of hexagonal, main shaft.

The eighty-five 7/32-inch saws are specified in Type 403 stainless steel. All other areas in contact with the material being processed are fabricated from clad Type 304.

Bulk Loading Assemblies Of Stainless Steel

Loading assemblies in stainless steel are now available for bulk loading or unloading wherever fluids,



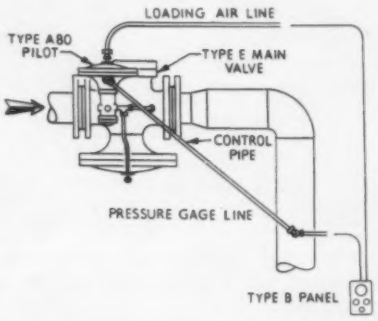
chemicals, or other products require stainless steel piping and stainless steel swivel joints. The assemblies are pre-engineered facilities designed to speed loading or unloading operations. The stainless steel loading assembly utilizes Series 7400 stainless steel swivel joints and stainless steel piping.

Spring balanced styles are available in 2½ inch, 3 inch and 4 inch sizes; counter weight actions are available in 2 inch, 2½ inch, 3 inch and 4 inch sizes. Tight fill connections are available for both models by attaching SS Kamlock couplers to the end of the drop tube. Occasionally style 50 SS swivel joint is required to correct any possible misalignment. Write to OPW-Jordan Corp., 6013 Wiehe Road, Cincinnati 13, Ohio, for Bulletin SRBc 68-59.

Pilot Features Pressure Control in Vacuum Range

Control accuracy to within ½ p.s.i. or better from positive pressures through the vacuum range to 30 inches Hg is possible in a series of air-adjusted pressure pilots, claims Spence Engineering Co., Inc., Walden, N. Y. These pressure pilots can also be used in conjunction with a temperature recorder controller. Remote air loading of the pilot makes possible centralized control by locating the pressure adjusting panel at any convenient distance from the regulator. Mounting the pilot at the valve provides greater stability of control and consequent savings in fuel, reports Spence.

Depending on the type of Spence



pilot chosen, the delivery pressure is changed by one up to 2⅔ p.s.i. for each 1 p.s.i. change in air loading pressure. With 0 p.s.i. air loading, Spence pilots A83, A84 and A85 will control at as low as 28 inches Hg; the A80 pilot down to 30 inches Hg.

Economical use of adjusting air is assured since air is bled only when the setting is being changed. Furthermore, says the manufacturer, maintenance and repair time is kept to a minimum by making all orifices easily accessible.

All A series Spence pressure pilots have bronze diaphragms. Cast iron, cast bronze and cast steel pilots are available to handle maximum initial pressures as high as 600 p.s.i. and temperatures up to 500°F.

Variable Speed Pulleys Announced

A line of variable speed pulleys has been developed for original equipment use and for replacement

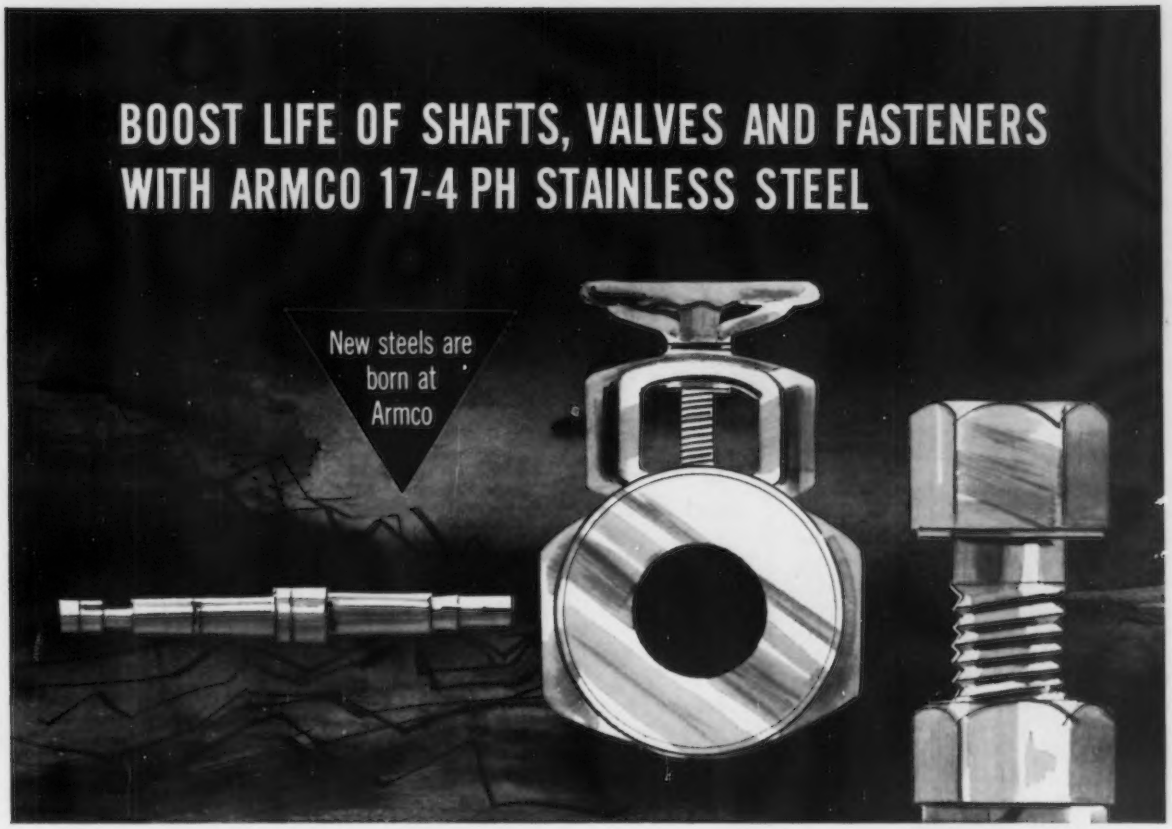
on existing equipment. The series consists of five sizes ranging from fractional to 1 Hp., with speed ratios up to 2.8 to 1.

Construction features include curved pulley faces for full belt contact, high ratio for small face diameter, positive lubrication and lightweight construction. For further information, contact Lovejoy Flexible Coupling Co., 4999 W. Lake St., Chicago 44, Ill.

High-Speed Squirrel Cage Induction Motors

High-speed squirrel cage induction motors are now being offered in 100-5000 h.p., 514-3600 r.p.m., frames 584-11320 by the Ideal Electric and Manufacturing Co., Mansfield 96, Ohio. A one piece, wrap-around steel plate cover running the full length of the frame, extends well below the center-line of the motor on each side to provide natural drip-proof protec-

BOOST LIFE OF SHAFTS, VALVES AND FASTENERS WITH ARMCO 17-4 PH STAINLESS STEEL



Add excellent mechanical properties of the hardenable chromium stainless steels and corrosion resistance of 18-8 to cost-saving advantages in fabrication. This is what you get with Armco 17-4 PH Stainless, a material that offers outstanding properties for shafts, fasteners, valves, and similar pulp and paper mill equipment parts.

TYPICAL MECHANICAL PROPERTIES FOR A RANGE OF HARDENING TEMPERATURES

Heat Treatment	U.T.S., psi	0.2% YS. psi	Hardness Rockwell
900 F	200,000	178,000	C44
1025 F	170,000	165,000	C38
1150 F	145,000	125,000	C33

CORROSION RESISTANT—WORKABLE

Corrosion resistance of Armco 17-4 PH is superior to all the standard hardenable chromium stainless grades. Laboratory and service experience demonstrates durability similar to Armco 18-8 (Type 304) with particularly good resistance to the type of erosion-corrosion encountered in pulp and paper mill process equipment.

Armco 17-4 PH bars are readily machined, forged or welded. Economical low temperature aging treatments (900-1150 F) eliminate scale and minimize distortion—permitting parts to be finish-machined before hardening.

For the shafts, valves and fasteners you use, it will pay you to investigate the economy and better performance possible with Armco 17-4 PH Stainless Steel. For more information, call your Armco Stainless Distributor or mail us the coupon.

ARMCO STEEL CORPORATION
1180 Curtis Street, Middletown, Ohio
Send me information on Armco 17-4 PH Stainless Steel.

Name_____
Company_____
Street_____
City_____ Zone____
State_____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation

TRASH RACK RAKE, hydraulically-operated, incorporates a digging action which removes trash from the very bottom of the racks, keeping them clear their full length. It is readily adaptable to present installations, or furnished complete with hoist carriage, moving apron or trash hopper. Standard equipment includes power operation for carriage traverse and rake hoisting. Bulletin 94 is available from The Portland Co., 58 Fore Street, Portland 6, Me.

tion and to increase the rigidity of the frame structure. The double end ventilation system provides maximum cooling, permitting full utilization of motor capacity. Motors are available with silicone rubber as well as class A, B and H insulations. Rotor and stator assemblies are manufactured of select materials and subjected to severe simulated-load tests. Stainless steel retaining rings over rotor end assemblies give protection against stresses where high peripheral speed is encountered. Critical speeds are maintained well above operating range to insure vibration-free operation. As a result of patented oil lubricated bearing plus split-type bearing bracket, a reduction in maintenance costs can be realized, it is said. Bearing replacement, when necessary, can be accomplished without uncoupling the motor, disconnecting leads or disturbing motor or coupling alignment.

MoS_2 Lubricant for High Pressure Applications

A molybdenum disulphide lubricant, Molykote M-55-Plus, for extreme pressure applications is announced by The Alpha-Molykote Corp., 65 Harvard Ave., Stamford, Conn. It is suitable, it is said, for slow moving parts under heavy loads, and for surfaces which would be reactive with additives. M-55-Plus's ability to "plate out" on metal surfaces, recommends it for applications in sleeve bearings and instrument gears, even though lightly-loaded.

A collodial dispersion of submicron particles in mineral oil, M-55-Plus has been approved for use in mist type lubricators. The MoS_2 particles show no tendency to settle out after extended periods. In one application, the Feldmuehle Paper and Cellulose Plant, in Duesseldorf-Reisholz, West Germany, found that M-55-Plus lowered the temperature of the main calender bearing (ring feed) which is loaded with 75,000 lbs., from 239°F. to 149°F.

Physical specifications are: viscosity (ASTM D88-44) 530 SUS at 100° F and 57 SUS at 210° F; flash point and fire point (ASTM D92-52) 340° F and 390°F respectively; specific weight, 7.9 lb/gal; Shell 4-ball welding load, 520 kg; mean Hertz load, 72; recommended dilution, 9-to-1; and service temperature range, 0 to 250° F.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Dec. 12	Dec. 19	Dec. 26	Jan. 2, 1960	Jan. 9, 1960
1959	97.0r	97.1r	62.6r	80.3r	95.3
	Dec. 13	Dec. 20	Dec. 27	Jan. 3, 1959	Jan. 10, 1959
1958	90.6	93.0	56.2	77.3	91.0

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	87.8	90.5	93.2	94.4	95.3	95.6	87.0	96.0	92.4	97.4	95.3‡	86.8‡	92.5‡
1958	86.9	89.5	89.5	88.4	87.2	87.2	75.3	89.6	86.5	91.6	90.4	83.1	87.0

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1952	1953	1954	1955	1956	1957	1958	1959
Year to Date	88.6	92.3	91.6	96.2	97.9	90.4	87.0	92.5
Year Average	88.6	92.3	91.6	96.2	97.9	90.4	87.0	92.5

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Dec. 12	Dec. 19	Dec. 26	Dec. 27-31	Jan. 1-9, 1960
1959	96	98	78	44	80
	Dec. 13	Dec. 20		Dec. 21-31	Jan. 1-10, 1959
1958	94	91	—	55	78

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	89	94	95	94	96	96	83	97	92	97	94	80	92
1958	84	86	87	84	85	86	76	93	90	95	93	77	86

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING Jan. 9, 1960	LAST WEEK ENDING Dec. 31, 1959	CUMULATIVE TO DATE Jan. 1 to Jan. 9, 1960, incl.
% Activity	80%	44%	80%
Total	261,488	138,521	261,488
Liner	91,170	39,460	91,170
Corrugating Material	42,338	26,141	42,338
Chip & Filler Board	2,979	2,063	2,979
Total Containerboard	136,487	67,664	136,487
Folding	48,916	25,438	48,916
Set-Up	10,456	3,933	10,456
Special Food Board	24,869	14,590	24,869
Other	11,878	26,896	11,878
Total Boxboard	96,119	70,857	96,119
Total Orders			
Received	293,514	221,382	
Unfilled End of Week	456,855	424,821	

Why Hendrick perforated plate filters best

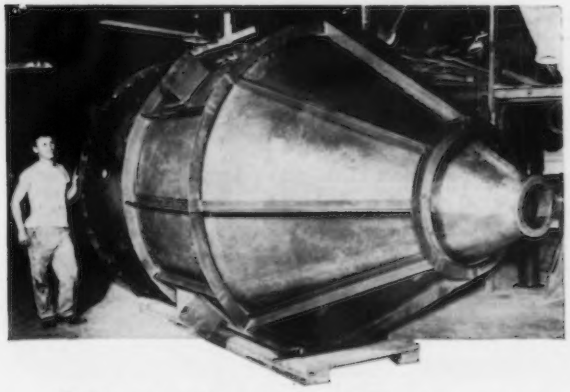
in paper and pulp production

Holes in Hendrick Perforated Plate are precision-cut to insure uniformity of mesh—and excellent draining and filtering. That's why Hendrick Plate cuts production losses due to blinding throughout the entire service life of the plate.

Hendrick Perforated Plate is furnished in commercially rolled metals and gauges to meet your specific requirements. Write for more information today.

Hendrick MANUFACTURING COMPANY
77 Dundaff Street, Carbondale, Pa.

Perforated Metal • Perforated Metal Screens • Wedge-Slot and Wedge Wire • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids • Hendrick Hydro Dehazer • Petrochemical Column Internals



du Verre CONSTRUCTION GIVES COMPLETE CORROSION CONTROL ... inside and out!

du Verre resin bonded Fiberglass construction is the answer to corrosion-free, trouble-free mill process equipment. Ducts, Hoods, Tanks, Fans, Vessels of any description can be easily fabricated and field erected at surprisingly low cost. du Verre Construction is strong, light-weight and is offered in a wide variety of resin formulations.

Unlike coatings or linings, du Verre resin bonded Fiberglass is homogeneous in structure giving complete protection inside and out. Painting and maintenance are not required.

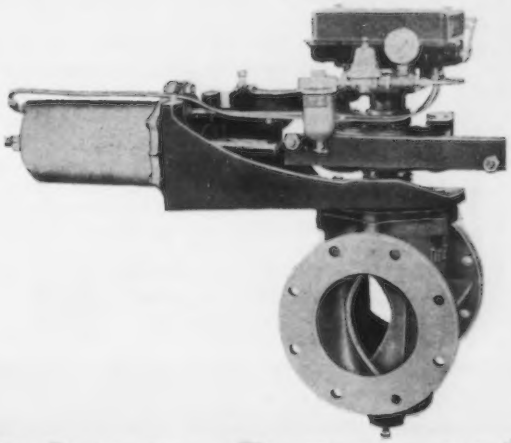
Eliminate rust, corrosion and contamination in your mill. Investigate du Verre Construction for your process equipment. Write for your free copy of Bulletin No. 100.

du Verre Inc.

duVerre, Incorporated
Box No. 37-E • Arcade, N.Y.

THERE'S A DIFFERENCE

and it can be yours ....

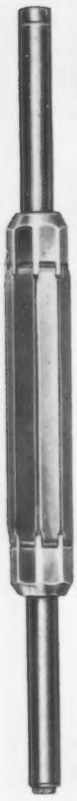


WITH
DeZurik Vee Port Valves
Diamond-Shaped Orifice
Straight-thru Flow
Instant Response
Extreme Sensitivity
Easily Changed
Characteristics

Higher rangeability is possible with DeZurik Vee Port Valves. Their diamond-shaped orifice will not plug up throughout the control range. Straight-thru flow permits higher capacity. The operator responds instantly to control signals, reacting with extreme sensitivity. Flow characteristics are changed easily by changing a cam in the positioner.

Write for more details on
DeZurik Vee Port Valves.

DeZURIK CORPORATION
SARTELL, MINNESOTA



AIR LOADED — POSITIVE LOCKING

AERO-SHAFT

SAVES TIME . . . SAVES MONEY

The pneumatic Aero-Shaft holds any core firmly providing uniform tension that allows faster roll speeds.

Aero-Shaft eliminates core damage . . . deflates instantly for split-second removal from used to new core.

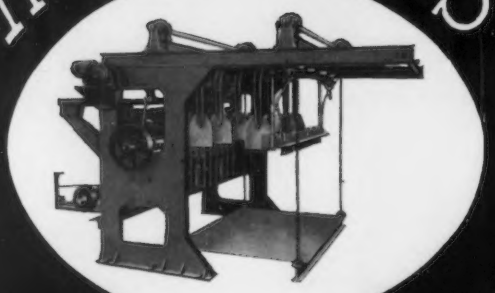
Double expanding rib section available for web widths over 40". Write today. Start saving with Aero-Shaft!

Folders, Rewinders, Embossers, Napkin and Core Machines, Letterpress and Flexographic Presses, Special Converting Machinery

PAPER CONVERTING MACHINE COMPANY
GREEN BAY, WISCONSIN

PCMC

HAMBLET LAYBOYS



Single and Duplex Layboys for finishing room, board and pulp machine application. Supplied with tandem delivery for speeds to 300 feet per minute, overlapping delivery for speeds above 300 feet per minute. Handles tissue, blotting, envelope, and various weights of paper and board.

WRITE FOR CATALOG

HAMBLET MACHINE CO.
LAWRENCE, MASSACHUSETTS

GET THE SCOOP ON SCOOPS

If you have a dryer drainage problem, don't do anything about it until you see the movie—

"Condensate Behavior in Rotary Dryers"

This 15 minute sound color film shows what goes on inside a dryer at a wide range of speeds . . . shows why conventional syphons lose efficiency at higher speeds . . . shows how to get condensate out at any speed. For a showing, contact your Armstrong Representative or write direct.

ARMSTRONG SYPHON SCOOPS
ARMSTRONG MACHINE WORKS
8181 Maple Street Three Rivers, Mich.
Manufacturers of Armstrong Inverted Bucket Steam Traps

Kalamazoo

WOOD TANKS

Built from best tank grade lumber. Backed by over 90 years' tank building experience. *Kalamazoo* can give you what you want. Free estimates and suggestions. Write today.

WOOD TANK DIVISION

Kalamazoo TANK and SILO COMPANY
858 HARRISON STREET, KALAMAZOO, MICH.

Another Plant To Serve You

SHIP US IN KALAMAZOO

PACKING PLANTS
CHICAGO, ILL.
WASHINGTON, D. C.
CAMDEN, N. J.
KALAMAZOO, MICH.
LOUISVILLE, KY.

THOMAS PAPER STOCK CO.
1500 N. Hooker St. MO-4-5700 Chicago 22, Ill.

PAPER TRADE JOURNAL CLEARING HOUSE

Help Wanted

PAPER MEN

$5,000 to $50,000

SALES • PRODUCTION • TECHNICAL

Finding and landing THE ONE BEST JOB requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only recognized professional specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing THE SPECIFIC SITUATION that most exactly fits the needs of each individual we serve.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

GEO. M. SUNDAY & ASSO.

PERSONNEL CONSULTANTS TO THE PULP, PAPER & ALLIED INDUSTRIES

6 East Monroe, Chicago ANdover 3-1970

SALES TRAINEE

Modern, young, progressive New England book paper mill needs a young, 25 to 35, college man, to train for paper sales. We offer a wonderful place to live and to work and a terrific opportunity for a real hard worker. Starting salary $5200. Reply Box 60-9, care Paper Trade Journal.

F-1

Sales Representative for New England area to sell Rubber Covered Rolls to Paper Industry, also general trade. Large well established company. Send complete resume to P. O. Box 60-16 care Paper Trade Journal. All replies Confidential. F-1

Technical Service and Development

Opportunity for a chemist with experience in starch industrial applications. This position will appeal to the person interested in servicing and promoting the companies present starches while assisting in the laboratory development of new starch products. Advancement opportunities are excellent. Company has an excellent benefit program. Send complete resume including present salary to Box 60-5 care of Paper Trade Journal.

J-25

Help Wanted

HELP WANTED

Experienced Machine Tender, Beater Engineer, Back Tender and Third Hand. Excellent wages and benefits. Call locally WO 3-7880 or write West Jersey Paper Mfg. Co., Camden, N. J. F-1

PROJECT MANAGERS

Engineers with exceptional pulp and paper mill experience and executive talents sought by leading equipment supplier and general contractor for complete pulp and paper mill projects.

Position offers creative opportunity for breaking new ground in the international pulp and paper industry.

Applicants must be qualified to take full charge of complete mill projects from preliminary engineering through start-up. Solid mechanical and/or chemical background necessary. Knowledge of economics and public relations will be valuable. Foreign languages desirable but not essential.

Headquartered in New York, London or Paris. Temporary residence required at project location during construction and start-up stages.

Please submit full resume including salary expectations. Replies held in strict confidence.

PARSONS & WHITTEMORE/LYDDON ORGANIZATION

250 Park Avenue, Room 1000-2, New York 17, N. Y.

J-25

RESEARCH CHEMIST

West Coast Cellulose Company, Research Division requires the services of two Research Chemists who hold Ph.D.'s or equivalent experience. The successful candidates will probably have some Research experience in Cellulose manufacture or Cellulose derivatives processing, but their greatest assets will be the ability to carry through Research problems to successful conclusions; to demonstrate creative thinking and to direct the activities of others. This is an opportunity to become a part of a growing Industrial Research Team. Apply, stating age, education, experience and any other information which you feel is relevant, to:

Personnel Office

Columbia Cellulose Company, Limited

P.O. Box 1000

Prince Rupert, B.C.

J-25

SUPERINTENDENT

Are you interested in a challenging opportunity with an excellent future? We want a man with real ability, age 35-45 who is thoroughly familiar with the manufacture of lightweight Fourdrinier Specialty Papers. Paper School Graduate preferred. New York vicinity. State full background and experience. All replies confidential. Reply Box 59-350 care Paper Trade Journal. F-1

FIELD SALES OPPORTUNITIES

Expanding dye and chemical sales to the paper industry offer opportunities for experienced and capable men to augment our present sales staff. Applicants should have prior color sales experience to this industry or be well versed in the application of dyes to paper. Remuneration will depend on ability and experience. Please submit complete resume and salary requirements. All inquiries will be reviewed and answered.
Box 60-21, care Paper Trade Journal. F-8

WANTED—TOUR BOSS for two machine mill in the Middle Atlantic Region. Set-up and Folding Box Board and Test Liner Board. Replies confidential. Address Box 60-6 care Paper Trade Journal.

J-25

NIGHT PAPER MILL FOREMAN WANTED

To rotate 4-12 and 12-8. Fully integrated pulp and paper mill in Middle Atlantic area. Technical background desired but not required. Excellent opportunity for advancement offered to man with initiative.

Send resume and salary required to Box #60-17, care Paper Trade Journal. F-1

OPPORTUNITY FOR PROCESS DEVELOPMENT ENGINEER

is open in the Research and Development Department of a leading producer of insulating, structural, and decorative fiber products—both flexible and rigid: location in North Central U. S. Work relates to process engineering associated with the development of new products—particularly insulating and rigid fiber boards. Requires liaison between Production and Research, and includes variable studies, process design and development, and plant scale demonstration. Applicants should have demonstrated leadership ability and possess qualities of initiative, thoroughness and interest in new fields. Five years experience in pulp or fiber preparation or paper or board felting processes in a board plant or paper mill required. Graduate chemical engineer preferred but mechanical engineer may be acceptable. Salary open. Employer pays our service fee. If available, we invite you to send us your up-to-date resume. It will be in confidence. J-25

CHARLES P. RAYMOND SERVICE, Inc.

294 Washington Street — Phone: Liberty 2-6547 — Boston 8, Mass.

Help wanted advertisements continued on page 52.

5 Special Steel boused water wheels with steel face casing and steel shaft with compressions coupling and pulley and shaft drive to pulp machine.

5 Carthage Machine Co. 3 pocket wood grinders, 24" capacity with 54" dia. x 27" wide grinding stone, bottom steel stone squaring up unit with track, complete with belt driven hydraulic pump and steel shaft drive from water wheel piping and accessories.

1 Special 72" steel continuous chain driven slither screen in cement constructed pit with 8 x 10" centrifugal pump with pulley and belt drive from line shaft.

1 Steam 1000 lb. capacity tile constructed open top stock chest, complete with agitator with self contained motor, wiring and controls.

1 Goulds Pumps Vertical 8" plunger pump with 3 bronze plungers, floor base, complete with pulley and belt drive from line shaft, piping and accessories.

1 Special Wet slush machine with 2—24" x 84" rollers, 2—32" dia. x 84" rollers, concrete housing, pulley and belt drive from line shaft.

2 Special 72" dry lap presses with cast iron frame and base, complete with 31 x 66" felt, inner cylinder with stainless steel screen and pulley with drive from line shaft.

2 Special 68" dry lap presses with case iron frame and base, complete with 33 x 66" felt, inner cylinder with stainless steel screen and pulley with drive from line shaft.

1 American Paper Machinery & Engineering Works 42" dia. x 42" steel housed pulp screen with outboard bearing and belt drive, complete with 7'6" x 13' top plank constructed 4 section trough in operation with 1—The Trimbey Co. steel house pulp screen with outboard bearing and belt drive from countershaft on floor below, complete with piping and accessories.

DESCRIPTION

1 Special 48" dia. blade log cutting or stasher saw with metal frame with pulley and belt drive from 72" dia. x 18" dia. steel flywheel and belt in operation with 175 feet of single chain conveyor in wood trough running outside building to river pick up.

1 Pulp Wood Conveyor Chain link conveyor with plank trough, belt drive, enclosed in frame shed, conveyor supported on single and double angle steel trestle.

1 Special 35 ton capacity 24' dia. x 30' high riveted steel ground wood storage tank with conical top with overflow valve and float in operation within building #7 Basement 1—12" x 15" centrifugal pump with 18 x 18" steel pulley and belt drive from line shaft, complete with belting and accessories.

1 54" dia. x 27" wide grinding stone Carthage or Norton.

Special 48" dia. saw blades for slasher saw.

Spare parts for wet lap presses, screens, Carthage grinders, pumps, etc.

4 Special press felts for dry lap machines.

As is, where is, mill located approximately 15 miles from Glens Falls Airport or 70 miles from Albany, New York. The above equipment is offered subject to prior sale. If interested, make offer. Inspection of the equipment can be made by appointment by contacting Mr. Nicholas T. Galante at the above address. Make offer. Must dispose of same. No reasonable offer refused, as we have no use for same. Possibly you can use these for parts, etc.

THOMAS A. GALANTE & SONS, INC.
P. O. BOX 150
MECHANICVILLE, NEW YORK

F-1

BARGAINS

IMMEDIATE DELIVERY

1—86" Farrel 8-Roll Calender Stack. A. F. Bearings. Full set of Doctors.
1—8" Pusey & Jones 7-Roll Calender Stack.
1—30" Dia. x 130" Face Farrel Roll Grinder., Complete.
1—5' x 86" Pusey & Jones Yankee Dryer.
1—92" Langston Winder equipped with both score and shear cut slitter devices.
1—86" Warren Winder Complete. Recently rebuilt with new drums and new A. F. Bearings and Housings.
1—110" Pusey & Jones 2-Drum Winder. A.F. Bearings.
1—84" Kamyr Machine. 75 Ton per day.
10—48" x 150" Pusey & Jones Dryers.
7—36" & 72" Pusey & Jones Dryers.
1—E. D. Jones Majestic Jordon No. A-482. S.S. Fillings.
1—74" Seybold Trimmer & Cutter Z-12.
1—45" Seybold Trimmer & Cutter with 5 H.P. 220/440 Volt Motor. Rebuilt.
1—42" Dia. & 110" Face Pope Reel.
1—25" Dia. x 156" Perforated Face Sandusky Suction Couch. Complete.
1—22" Dia. x 138" Perforated Face Sandusky Suction Couch. Complete.
1—22" x 111" Vertical Size Press with Micrarock and Rubber Rolls. A. F. Bearings with frame work. Pneumatically loaded.
1—24" x 102" Extractor Rolls. 20" Dia. Rubber Top Roll mounted with A. F. Bearings and Frame work. Spare Rolls.
1—22" x 96" First Press with Micrarock Roll and Rubber Roll.
1—22" x 110" Press with Micrarock Roll and Rubber Roll.
1—10-Knife Carthage Chipper with A. F. Bearings.
1—A.P.P. Rotary Centrifugal Pulp Screen. 40" Dia. x 42" Face. Serial #1274227.
1—#3A Bird Screen. S.S. Plates.
1—Hudson Sharpe Toilet Tissue Converting Machine. Serial #2123.
2—Packer 12-Plate Flat Screens. S.S. Bodies #.22 S.S. Plates. Less than 5 Years Old.
1—36" x 96" Saveall, Rubber Couch, S.S. Vat, A.F. Bearings.
1—Hummer Vibrating Screen.
1—Seybold Knife Grinder. Size G. 84" Table. Serial #4X802.
1—Sandy Hill Sulphur Burner. Complete.
1—54" Dia. x 48" Face Valley Iron Tub Beater.
1—53" Dia. x 66" Face Dilts 2000-lb. Iron Tub Beater with S.S. Hood.
16—Beater Rolls and Stands. Various Sizes.
5—Triplex and Duplex Pumps. Various Sizes.
1—DeZurick Consistency Regulator. Complete. One year old, never used.
1—8' x 10' Oliver Continuous Filter. Steel Tub.
1—100 H.P. Terry Turbine, Type G, 3615 RPM, 250 lbs. Steam Pressure. Back Pressure 35 lbs. Fully automatic with Terry Speed Reducer.
1—No. 2 Jones Pulper. A.F. Bearings. Spare Worm.
1—250 H.P. Ingersoll-Rand Diesel Engine Generator Set—G.E. Generator, 150 KW, 480 Volts, 720 RPM.
3—75 KVA G.E. Spirakore Transformers, Type HS, Class OA, 2400/4160 Y Primary to 120/240 Secondary.
1—60 H.P. G.E. Gear Motor, T.E.F.C. 440 Volts, 1730 Max./427 Min. RPM, 4.15 to 1 Ratio.
1—15 H.P. West. Gear Motor, T.E.F.C. 220 Volts, 87 RPM.
1—7½ H.P. West. Gear Motor, T.E.F.C. 550 Volts, 1165 RPM to 29 RPM.
1—7½ H.P. G.E. Gear Motor, T.E.F.C. 220/440 Volts, 1738 RPM, 9.2 to 1 Ratio.
1—Horton Clutch, AF. Bearings.
1000 Electric Motors from ¼ H.P. to 600 H.P. In Stock

The above is but a small part of the inventory we carry. We can furnish you with almost anything in the line of paper mill, electrical and machine shop equipment.

Write—Wire—Phone For Your Needs

RUDERMAN MACHINERY EXCHANGE
GOUVERNEUR, NEW YORK
Telephone 333-324 TF

SUPPLIERS OF PAPER MACHINERY TO THE WORLD — RPM

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET • NEWARK 4, NEW JERSEY

Cable Address: "JACKROSS Newark, N.Jer" HUMBOLDT 2-2177

CANADA — 199 BAY STREET • TORONTO, ONTARIO • EMPIRE 4-5041

SOUTH — P. O. BOX 2065 • MOBILE, ALABAMA • GREENWOOD 9-1950

QUALITY GUARANTEED MACHINERY ERECTED FOR YOUR INSPECTION

CALENDER STACKS

1— 58" M & W 9 roll
1— 66" M & W 5 roll
1— 80" P & J 7 roll; heavy duty
1— 82" Lobdell 5 roll
1— 86" Lobdell 5 roll
1—115" B-C 7 roll
2—124" Downingtown 5 roll & 6 roll
1—128" Downingtown 7 roll

CHIPPERS

1— 88" Murray 10 knife w/600 hp motor
1— 96" Murray 6 knife; A-F Brng.

COATERS

1— 24" Waldron Coater & Embosser
1— 38" Waldron Reverse Roll Coater w/drive
2— 40" Chapman Extrusion Type
3— 65" & 76" Mayers

COMPLETE MACHINES

3—Sandy Hill 81" trim single cyl. Tissue
1—M & W 3 cyl. 50" trim Board Mill complete
1—M & W 72" Fourdrinier paper machine

CYLINDER MOLDS

2— 63" face x 36" dia w/rubber couches
1—104" face x 36" dia
1—107" face x 48" dia; A-F Brng
2—111" face x 36" dia; A-F Brng
1—131" face x 42" dia.; A-F Brng
1—136" face x 54" dia; SS covering

CYLINDER WET ENDS

Downingtown single cylinder; 99" face x 48" dia.; 18" dia. couch

DRYERS—HYDROSTATICALLY TESTED

24" Dia.:
38—46" face; Chrome plated
1—156" face w/gear and steam joint

28" Dia.:
3— 70" face w/gears & bearings
3— 73" face w/gears & bearings
3— 76" face w/gears & bearings
3— 77" face w/gears & bearings
2— 84" face
2— 84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face
2— 46" face
22— 54" face; complete section
4— 70" face w/gears & bearings
11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
1— 74" face w/gears & bearings
3— 75" face w/gears & bearings
9— 76" face w/gears & bearings
1— 77" face w/gears & bearings
1— 78" face w/gears & bearings
2— 80" face
5— 84" face
3— 88" face
18— 90" face; complete section
1—138" face
10—160" face

42" Dia.:
24—102" face; complete section
1—106" face
1—110" face
40—118" face; complete section
1—120" face
1—160" face

48" Dia.:
57— 46" face; chrome plated
13— 82" face; complete section
5— 84" face
24—110" face w/frames & bearings
10—123" face w/gears, frames & bearings
1—128" face

DRIVES—ENCLOSED RIGHT ANGLE

1—Michigan 92½ h.p. ratio 10.1 to 1
1—50 h.p. Reliance VS with MG set & controls; 850-1200 r.p.m.
1—Beloit 65 h.p. Ratio 2.88 to 1
1—Phila. 28 h.p. Ratio 10.56 to 1

EMBOSSERS

1— 80" Hudson Sharp; A-F Brng
2— 62" Textile Machinery Co; w/drives

FILTERS—STEEL VATS

1—New Oliver 7' dia American 7 disc; all SS; Reliance Drive
1— 6' face x 3' dia Dorr-Oliver
1— 10' face x 8' dia Oliver chem. sludge filter

FLAT SCREENS

2— 12 Plate IMPCO w/Dunbar Drives
1— 4 plate Tailing Screen

INLETS & HEADBOXES

1—112" Valley w/8" distributing roll

JORDANS

2—Appleton #1 w/A-F Brng
1—N & W Pony w/75 h.p. motors
1—Horne w/AF Brngs

MOTORS 3 PH 60 CYCLE

1—100 hp GE; 440 v; 695 rpm
2—100 hp GE; 440 v; 430 rpm
1—350 hp GE; 2200 v; 720 rpm: Synch

PAPER MACHINES DRIVES

1—GE 65 hp shunt wound DC motor w/75 hp AC motor, MG set & excitor
1—De Laval 100 h.p. steam turbine w/reducers

PULPER

1—Dilts 16 ft. complete w/125 h.p. motor, elec. hoist & oil pump

PUMPS—OPEN IMPELLER

1—Shartle 8 x 16 Triplex
23—Centrifugal Stock and Water Pumps

REELS

1— 36" Kohler Automatic 2 arm unwind reel
1—100" Kohler automatic two arm unwind reel; 60" dia rolls; new condition
1—116" Downingtown two bowl A/F Brngs
1—123" Beloit—2 bowl
1—126" Beloit Aldrich surface drives type
1—150" B & S pope type w/Reliance drive

REFINERS

1—Dilts Classifiner
2—#1 Claflin; A-F Brng
1—24" Bauer Double Disc w/two 50 h.p. motors
1—24" Downingtown Weiner; new
1—Model 185E Bauer w/two 150 h.p. motors
2—Model 410-1 40" Bauer; w/two 400 h.p. motors each; used 6 mos.

ROLL GRINDERS

1—124" x 30" Farrel w/crowning device
1—208" x 32" Farrel w/crowning device

ROLLS

Distributor—Stainless Steel
2— 8" dia. x 115" face
1— 6¼" dia. x 115" face

Couch—Rubber Covered
1—14" dia. x 158" face
2—15¼" dia. x 136" face
1—16" dia. x 96" face
2—16" dia. x 198" face
3—17½" dia. x 135" face
1—18¼" dia. x 84½" face
1—18" dia. x 108" face
2—16" dia. x 65" face

Press—Rubber or Brass Covered
71 Miscellaneous sizes. Drawings available

Felt—Steel, Brass, Rubber Covered
335 Miscellaneous sizes. Drawings available

Calender—Chilled Iron
72 Miscellaneous sizes. Drawings available

ROTARY SCREENS

5—Bird #3A, Model 100 w/SS or copper vats
1—Jones Leithwalk copper lined

SAVEALL

1—100" face x 48" dia. Shartle w/steel vat, A-F Brng & motor drive

SHEETERS—DOUBLE KNIFE

1—157" Masson-Scott; like new

SHEETERS-SINGLE KNIFE

1— 36" Beck w/layboys & backstand
6— 56", 60", 66", & 70" Hamblets w/backstands
1— 65" Kidder w/elec. eye and layboy
2— 82" Hamblets w/backstands & layboys
1—105" Hamblet
1—110" Hamblet w/layboy
1—112" Hamblet Heavy duty, roller bearing, w/layboy, backstand, monorail, etc. New 1954

SLITTERS AND REWINDERS

18" Maximum Rewind Diameter
1— 72" Cameron Type 26-3 A Duplex

24" Maximum Rewind Diameter
1— 32" Cameron Type 6
3— 42" Cameron Type 6
1— 42" Cameron Type 6 Shear Cut
2— 48" Langston Duplex Shear Cut
2— 52" Cameron Type 6
1— 62" Cameron Type 8
1— 72" Cameron Type 9-5

30" Maximum Rewind Diameter
1— 42" Essex Duplex Shear Cut; A-F Brng
1— 42" Cameron Type 28-3 duplex
1— 60" Langston Shear Cut
1— 62" Cameron Type 6
1— 72" Cameron Type 10; A-F Brng
1— 72" Cameron Type 10 Shear Cut; A-F Brng
1— 92" Cameron Type 28-3 Duplex w/Vari-Drive

36" Maximum Rewind Diameter
1— 62" Cameron Type 8
1— 70" Variable Speed Center Winder
1— 72" Cameron Type 10; A-F Brng

42" Maximum Rewind Diameter
1— 40" Egan Shear Cut; A-F Brng
1— 60" Kidder Model SH Low Bed
1— 72" Beloit Shear Cut
1— 82" Langston Shear Cut; A-F Brng
1— 82" Cameron Type 8-10
1— 92" B & S; A-F Brng
1—136" Cameron Type 18; A-F Brng

48" Maximum Rewind Diameter
1— 54" Johnstone; A-F Brng
1— 86" M & W Four Drum Shear Cut
1—114" Langsten
1—152" Langston Shear Cut

60" Maximum Rewind Diameter
1—110" Cameron Type 18 w/Motor Drive
1—120" M & W two drum w/75 h.p. drive
1—136" Langston Type DA Shear Cut; A-F

STOCK CLEANERS

2—1000 g.p.m. Shartle Hydrafuges w/motors
14—Bird Dirtecs; 2" & 6" bronze
1—Bird Dirtec 12". Rebuilt by Bird

SUPERCALENDERS

2— 30" Norwood 4 roll
1— 63" Norwood 8 roll; A-F Brng
1— 65" Norwood 8 roll; A-F Brng
1— 92" Norwood 7 roll w/drive

SUCTION EXTRACTOR ROLL—DOWNINGTOWN

1—105" face x 19" dia.

TRIMMERS—POWER BACK GAUGES

2— 38" Seybold w/motors
1— 57" Seybold Precision
3— 65", 74", & 84" Seybold Daytons
2— 74" & 84" Seybold 12Z w/air tables
1— 94" Seybold Precision w/air table

VACUUM PUMPS

7—H-4, ½H-5, & H-5 Nash
2—L-5 Nash
2—K-4 & K-7 (new) Nash
6—#2, #3, #4, #6 & #7 Nash Hytors
1—8 x 10 Connersville
2—MD-2 Nash w/motors; new laboratory models
1—L-6 Nash w/40 h.p. motor

WET MACHINE

1—15" Lab. Model complete w/presses, etc.

YANKEE DRYERS

1—132" face x 10' dia Beloit; 35 psi

Help Wanted

Help Wanted

SALES REPRESENTATIVE

required by
a well designed and located,
modern, one machine
FINE PAPER MILL
now under construction at
New Westminster, British Columbia

Applicants must have a minimum of three years' selling experience in the fine paper field and be preferably between 25 and 35 years of age.

If you would like to be a part of this operation right from the start, and grow with it, you are invited to write now in strictest confidence and fullest detail to the

Sales Manager
Island Paper Mills Division
MacMillan, Bloedel and Powell River Limited,
802 Standard Building, Vancouver 2, British Columbia J-25

Chemists
Chemical Engineers

Paper Chemists
Paperboard Chemists

Look up the employment representative of

THE MEAD CORPORATION

during Paper Week in New York. He'll talk to you about broad career opportunities for technical men in the fields of paper, containers, and packaging. Mead's expanding Research center, new product development, and container technical service provide challenging positions for experienced men in:

1. **Pulping and Bleaching**
2. **Paper Technology**
3. **Coatings**
4. **Product Development**
5. **Basic Research**
6. **Technical and Sales Service—Containers**

Call Mr. Meilinger at The Biltmore Hotel, February 21 through February 25, for an interview. Or write to H. A. Meilinger, The Mead Corporation, Chillicothe, Ohio. F-1

TECHNICAL SUPERVISOR

WANTED

Young technically trained graduate with five to ten years experience in the paper industry to take charge of technical control and service in a Mid-western specialty mill. Exceptional opportunity for a competent and ambitious man with the opportunity to advance to positions of greater responsibility in production. Excellent benefits and a good starting salary. Please reply to Box 60-20, Paper Trade Journal, giving resume of experience and education as well as references.

F-8

TECHNICAL SALESMAN

Experienced Paper Mill Salesman familiar with lightweight papers (no kraft or board) to sell Food Processors, Converters, Merchants. Excellent future for right man. Near New York City. All replies confidential. Reply with full information to Box 59-351 care Paper Trade Journal.

F-1

Situations Wanted

GENERAL SUPERINTENDENT

Technical & practical experience. Superior record in production. Extensive experience all fine & specialty grades, News & Kraft. Thorough knowledge of Stock preparation.

Address Box 60-19 care of Paper Trade Journal. F-8

EXECUTIVE - WORK MANAGER

—in manufacture of boards & papers; their conversion; and film. Wishes change for challenging opportunity. Successful record in production; organization; labor relations, & development. Address Box 60-10 care Paper Trade Journal. J-25

Highly Experienced Practical Paper maker, age 47, with 29 years experience on most grades of paper seeks new position as Superintendent or assistant. Fine paper preferred. Write Box 60-22 care Paper Trade Journal. F-15

ENGINEER now employed far east, pulp and paper experience. Like to contact U. S. Firm wanting technical representative in Japan or Far East. Address Box 60-23 care Paper Trade Journal. J-25

Situations Wanted

Available—Sr. Mechanical Engineer with a very extensive background in the pulp, paper and board industry as Chief engineer, plant engineer and production supervisor. Experienced and qualified to supervise or assist in mill, power or electrical modernization or construction programs. Well versed in labor relations. Invites correspondence. Address Box 60-14 care Paper Trade Journal. F-8

Gen. Superintendent or Supt.

Experienced paper maker. Extensive experience in the manufacture of folding, setup and pat. coated board. Familiar and capable of solving all problems that arise in manufacturing of board, power and maintenance. Presently employed. Box 59-346 Care Paper Trade Journal. F-8

SUPERINTENDENT or Manager — 25 years experience in fine Papers, Tissues, Towels, Newsprint. All types machines, incl. hi-speed Yankees. Address Box 60-7 care Paper Trade Journal. F-15

For Sale

FOR SALE

Two #1 Emerson Jordans with Anti-Friction bearings, complete with 150 H.P. Motors and Starters.
One #2 Emerson Jordan with Anti-Friction bearings, complete with 225 H.P. Motor and Starter.
One 150 H.P. Synchronous Motor.
The above Jordans and Equipment can be inspected at our plant at Warrensburg, New York; Equipment now in operation.

THOMAS A. GALANTE & SONS, INC.
Mechanicville, N. Y.

J-25

LIQUIDATION
PRICED FOR QUICK SALE

5—B & W 70,000#/hr. Boilers, Integral Furnace type FL, 450#. (New 1952-1955)
1—Carrier Cent. Compressor, 6 stage, 9370 cfm, disch. press. 124.7# with 2310 HP Turbine.
100—Centrifugal Pumps, 15 to 7000 gpm.
35—Turbines, 10 to 1400 HP.
125—Instruments — Recorders, Controllers and Transmitters.
100—Control Valves

PARTIAL LIST ONLY SEND FOR CIRCULAR

BRILL EQUIPMENT COMPANY
DESTREHAN, LA. NORCO 6571
Home Office: 37-65 Jabez St., Newark 5, N. J.

J-25

Wanted

WANTED

Rewinder—complete with unwind stands and drive. Approximately 114" Trim. Please submit full particulars, with price and delivery. Address Box 60-18 care Paper Trade Journal. J-25

WANTED — SHEETER

with backstand and layboy 36" to 56". Prefer Clark, Beck or Hamblet. Must not be over 15 years old and reasonably priced. Call Richard Eddins, Alpine 4-9718 or write P. O. Box 4146, Nashville, Tenn. F-1

MACHINERY WANTED—Paper Sheeter with electric eye and layboy and Simplex centre seam polyethylene bag machine. Address Box 60-24 care Paper Trade Journal. J-25

ELIXMAN
CORES CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.
CORINTH, N. Y.

WEYERHAEUSER

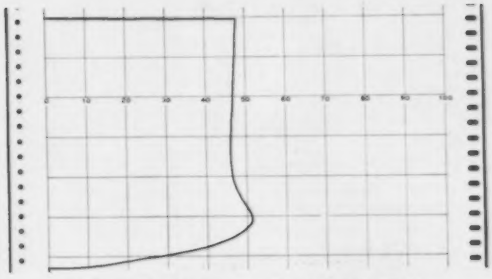
BLEACHED SULPHITE
KRAFT CONTAINER BOARD

BLEACHED SULPHATE
BLEACHED KRAFT PAPERBOARD

TEST TIPS
FROM THE SCOTT LABORATORY

TEST TENSILE STRENGTH

with the Scott Model CRE Tester



Yield Point 52 lbs. Break Point 48 lbs.

The electronic chart recording above clearly indicates that the yield point of a sample plastic film is actually *higher* than ultimate tensile strength. Note, too, how graphic precision of electronic weighing reveals "sag-back", or reversion, while stress is continuing. Highly critical quality evaluations such as this are now made possible—and economically feasible—with the Scott Model CRE tester. Write for "CRE Brochure."

SCOTT TESTERS
THE SURE TEST...SCOTT!

SCOTT TESTERS, Inc., 51 Blackstone Street, Providence, Rhode Island

---

A COMPLETE LINE OF AUTOMATIC WEB GUIDING EQUIPMENT

WRITE FOR CATALOG

• FIFE •
MANUFACTURING Company
INCORPORATED

P. O. BOX 9815 OKLAHOMA CITY 18, OKLAHOMA

A Stitch in Time Saves Nine...

Pulp, Paper & Board Mill Maintenance Based on actual in-plant experience and prepared by well known men in the industry, this text in 122 pages relates maintenance procedures and practices for kraft mills, semichemical mills, bleach fourdrinier and cylinder machines, stock preparation machinery and other mill equipment. Price $2.50 from

LOCKWOOD TRADE JOURNAL COMPANY,
49 West 45th Street, New York, 36, NY

Please send me postpaid ..... copy of PULP, PAPER AND BOARD MILL MAINTENANCE.

Name .....Title .....

Company .....Address .....

ADVERTISERS

Albany Felt Co. ..... —
Allis, Louis Co. ..... —
Allis Chalmers Mfg. Co. ..... —
American Bitumuls & Asphalt Co. ..... —
American Bridge Div., U. S. Steel Corp. ..... —
American Cyanamid Co., Paper Chemical Dept. ..... —
Dyes Dept. ..... —
Organic Chem. Div. ..... —
Pigment Dept. ..... —
American Paper & Pulp Co. Inc. —
American Potash & Chem. Corp. ..... —
American Steel & Wire Co. .. —
Ames Company, Inc. ..... —
Anglo Paper Products Ltd. .. 8
Annin Company ..... —
Antara Chemicals, Sales Div. Gen. Aniline & Film Corp. ..... Facing 2
Apmew, Inc. ..... —
Appleton Machine Co. ..... —
Appleton Wire Works ..... —
Armco Drainage & Metal Prod. Co. ..... —
Armco Steel Corp. 45
Armstrong Machine Works .. 48
Asten-Hill Mfg. Co. 2
Atherton, James, Ltd. ..... —
Atlantic Coast Line R. R. ..... —

Babcock & Wilcox Co. ..... —
Bahr Brothers Mfg. Co. ..... —
Bailey Meter Co. .....Facing 43
Barco Manufacturing Co. ..... —
Bauer Bros. Co. .....Cover 3
Becco Chem. Div. Food Machy. Corp. ..... —
Beloit Iron Works Co. Bet. 18 & 19
Binet, Louis et Cie ..... —
Bird Machine Co. ..... —
Bixby, R. W., Inc. 17
Black-Clawson Co. .....Facing 34
Bolton & Sons ..... —
Brandon Sales, Inc. ..... —
Broughton, A. E. & Co. ..... —
Brown Company ..... —
Buckeye Cellulose Corp. ..... —
Buffalo Forge Co. ..... —
Buffalo Pumps ..... —
Butterworth, H. W., & Sons Co. .. —

Cady, E. J., & Co. ..... —
Caldwell, Wm. & Co. ..... —
Cameron Machine Co. ..... —
Carthage Machine Co. ..... —
Celgar Ltd. ..... —
Central National Corp. Front Cover
Central Soya Co. ..... —
Ciba Company .....Facing 42
Cities Service Oil Co. ..... —
Clark-Aiken Company 3
Classified Advertising 49
Clearing House 49
Cleveland Crane & Engrg. Co. —
Coffin Turbo Pump Co. ..... —
Columbia-Geneva Steel Div., U. S. Steel Corp. ..... —
Columbia-Southern Chem. Corp. Sub. of Pittsburgh Plate Glass Co. ..... —
Combustion Engrg. Co. ..... —
Conoflow Corp. ..... —
Conveyair Sales Ltd. ..... —
Corn Products Sales Co. ..... —
Crane Company ..... —
Curtiss-Wright Corp. ..... —

Darling & Company ..... —
Davis, Frank H., Co., Inc. ... —
DeZurik Corporation 47
Diamond Alkali Co. ..... —
Dilts Machine Works ..Facing 34
Dodge Mfg. Co. ..... —
Dorr-Oliver ..... —
Dow Industrial Service Div. Dow Chemical Co. .... —
Doyle, J. E., Co. ..... —
Draper Bros. Co. ..... —
Dryden Paper Co., Ltd. ..... —
du Pont, E. I., de Nemours & Co., Dyestuffs Dept. ..... —
Electrochemical Dept. 41
Industrial & Biochem. Dept. Pigments Dept. ..... —
Dusenbery, John, Co. ..... —
Duverre Inc. 47

Eaton Manufacturing Co. ..... —
Ebasco Services, Inc. ..... —
Egan Frank W. & Co. ..... —
Electric Mchy. Mfg. Co. ..... —
Elixman Paper Core Co. 53
Elwell-Parker Elec. Co. ..... —
English China Clays Sales Corp. —
Export Supplement ..... —
Extremultus, Inc. ..... —

Fairbanks Morse & Co. ..... —
Falk Corporation ..... —
Farrell-Birmingham Co. ..... —
Fife Manufacturing Co. 53
Fisher Governor Co. ..... —
Fitchburg Screen Plate Co. .. —
Food Mchy. & Chem. Sales Dept., Chemicals & Plastics Div. 37
Foxboro Co. ..... —
Frederick Iron & Steel Co. ... —

Garlock Packing Co. ..... —
Gaspesia Sulphite Co. Ltd. .. 8
Gates Rubber Company ..... —
Geigy Chemicals Corp., Geigy Dyestuffs Div. ..... —
General Dyestuffs Co. ..... —
General Electric Co. ..... —
General Mills, Inc. ..... —
General Tire & Rubber Co. .... —
Gibbs-Brower Co. ..... —
Gilbert & Nash Co. ..... —
Glidden Company ..... —
Goodrich Chemical Co. ..... —
Goodyear International Corp. ..... —
Goodyear Tire and Rubber Co. ..... —
Gottesman & Co. .....Front Cover
Goulds Pumps ..... —
Great Eastern Packing & Paper Stock Corp. ..... —
Grinnell Co., The ..... —
Gurley W. & L. E. ..... —

Hamblet Machine Co. 48
Hardinge Company ..... —
Harbison Walker Refractories —
Harris Seybold ..... —
Harshaw Chemical Co. ..... —
Heimbach, Thomas J. ..... —
Hendrick Mfg. Co. 47
Hercules Powder Co. ..... —
Hills-McCanna Co. ..... —
Hooker Chemical Co. ..... —
Houghton & Company ..... —
Huber, J. M. Corp. ..... —
Hudson Sharp Machine Co. ... —
Hungerford & Terry, Inc. ... —
Hunt, Rodney ..... —
Huyck Felt Company ..... —

Improved Machinery, Inc. .... —
Industriplanering ..... —
Ingersoll-Rand Co. 10

Jagenberg Werke ..... —
Jenkins Brothers ..... —
Johns-Manville Corp. ..... —
Johnson Corp., The ..... —
Johnson, Alvin H., Co. ..... —
Jones, E. D., Corp. 7
Jones & Laughlin Steel Corp... —

Kalamazoo Tank & Silo Co. .. 48
Kamyr, Inc. ..... —
Kidder Press Co. ..... —
Kinney Engineers Inc. ..... —
Knox Woolen Co. ..... —
Koppers Co., Inc. ..... —

Langston, Samuel Co. ..... —
La Papeterie ..... —
Lawson Company ..... —
Layton-Greenfield Inc. ..... —
Lestoil, Inc. ..... —
Link Belt Co. ..... —
Lockport Felt Co. ..... —
Lockwood Directory ..... —
Lockwood Greene Engineers .. —
Lodding Engineering Co. 42
Lukon, Inc. ..... —
Lunkenheimer Co. ...Back Cover
Lyddon & Co. ..... —

Magnus Metal Corp. ..... —
Main, Charles T., Inc. 42
Manchester Machine Co. ..... —
Marathon—A division of American Can ..... —
Mead Pulp Sales, Inc. ..... —
Mercury Engrg. Corp. 9
Miller Corp., Harry ..... —
Millspaugh Ltd. ..... —
Minneapolis-Honeywell 6
Mixing Equipment Co. ..... —
Monsanto Chemical Co. ..... —
Montague Mch. Co. ..... —
Moore & White Co. ..... —
Morden Machines Co. ..... —
Mt. Vernon Mills Inc. ..... —
Murray, D. J., Mfg. Co. ..... —

Nalco Chemical Co. ..... —
Nash Engineering Co. ..... —
National Lead Co., Magnus Metal Div. ..... —
National Starch & Chem. Corp. —
National Tube Div., U. S. Steel Inc. ..... —
New Jersey Zinc Co. ..... —
Nichols Eng. & Research Corp. —
Nopco Chemical Co. ..... —
Norgren, C. A. Co. ..... —
Northeastern Paper Sales 8
Norton Co. ..... —

Oakite Products Inc. ..... —
Ohio Injector Co. ..... —
Olin Mathieson ..... —

Paper Conv. Mch. Co. 48
Parsons & Whittemore ..... —
Patton Mfg. Co. ..... —
Penick & Ford ..... —
Penn. Ind. Chem. Corp. ..... —
Penobscot Chemical Fibre Co. 35
Pennsalt Chem. Corp. ..... —
Perkins, B. F. & Sons, Inc. .. —
Perkins Goodwin Co. ..... —
Permutit Co., Div. of Pfaudler Permutit Inc. .....Facing 35
Pfauldler Permutit Inc., Permutit Div. .....Facing 35
Pioneer Paper Stock Co. ..... —
Potdevin Machine Co. ..... —
Powell Valves ..... —
Price & Pierce, Ltd. ..... —
Provident Life & Acc. Insurance —

Railway Supply & Mfg. Co... —
Raymond, Charles P., Service Inc. 49
Record Fdy. & Mch. Co. ..... —
Red Ray Mfg. Co. ..... —
Rice Barton Corp. ..... —
Riedel, Gus & Son ..... —
Riegel Paper Corp. ..... —
Rohm & Haas Co. 12
Ronningen-Petter Co. ..... —
Roosevelt Paper Co. ..... —
Ross, J. J., Co. ..... —
Ross, J. O., Engrg. Co. ..... —
Ross Midwest Fulton Corp. .. —
Ross Paper Machinery Co. .. 51
Ruderman Machinery Exchange 50
Rust Engineering Co. ..... —
Ryerson, Jos. T. & Son ..... —

Sandoz, Inc. ..... —
Sandy Hill Iron & Brass Works 21
Scapa Dryers Inc. ..... —
Scott Testers 53
Seaboard Air Line R. R. Co. ..... —
Shartle Div., Black-Clawson Co. ..... Facing 34
Shawinigan Resins Corp. ..... —
Sheffield Corp. ..... —
Shuler & Benninghofen ..... —
Shy, C. D. & Company ..... —
Signode Steel Strapping Co. .. —
Sinclair Company ..... —
Sirrine, J. E., Co. ..... —
SKF Industries ..... —
Smidth, F. L. & Co. ..... —
Socony Mobil Oil Co. ..... —
Sonoco Products Co. ..... —
Southworth Machine Co. 39
Spraying Systems Co. ..... —
Sprout Waldron & Co. ..... —
Stadler Hurter & Co. ..... —
Staley Mfg. Company ..... —
Stebbins Engrg. Co. ..... —
Stein, Hall & Co. ..... —
Stephens-Adamson Mfg. Co. .. —
Stone & Webster Eng. Corp... —
Stowe-Woodward, Inc. ..... —
St. Regis Paper Co. ..... —
Sunday, George M., Assoc. ... 49

Taylor Instrument Co.'s ..... —
Taylor Stiles & Co. ..... —
Taylor-Wharton Company .... —
Techno Corp. ..... —
Tennessee Coal & Iron Co..... —
Tennessee Corp. ..... —
Testing Machines ..... —
Texaco, Inc. 4
Texas Gulf Sulphur ..... —
Thiele Kaolin Co. 20
Thomas Paper Stock Co. 48
Titanium Pigment Corp. 43
Torrington Company ..... —
Turner Halsey Co. ..... —

United Engrg. & Fdy. Co. ... —
U. S. Industrial Chem. Co. Div. of National Distillers & Chem. Corp. ..... —
U. S. Rubber Company ..... —
U. S. Steel Corp. ..... —
United States Steel Export .. —
United States Steel Supply Co. —

Valley Iron Works ..... —
Vanderbilt, R. T., Co. ..... —
Virginia Smelting Co. ..... —
Voith, J. M., G. m. b. h. .. —

Waldron-Hartig Div., Midland Ross Corp. ..... —
Waldorf Industrial Controls .. —
Walworth Co. ..... —
Weber, H. G., Company ..... —
West End Chemical Div., Stauffer Chem. Co. ..... —
Westvaco Div., Food Mchy. & Chem. Corp. ..... —
West Virginia Pulp & Paper Co. ..... —
Weyerhaeuser Timber Co. 53
Wheeler Roll Co. 42
Williams Apparatus Co. ..... —
Williams-Gray Co. ..... —
Wisconsin Wire Works ..... —
Witco Chemical Co. ..... —
Woodpulp, Inc. ..... —
Wood's, T. B., Sons Inc. .... —
Wyandotte Chem. Corp. ..... —
Wyatt Metal & Boiler Works ... —

Yarnall-Waring Co. ..... —

While we strive for accuracy in preparing the above index which is purely a service to our readers, we cannot be responsible for errors.

PAPER TRADE JOURNAL

BUSINESS STAFF

Arthur E. Gordon, Business Mgr.

Francis J. Gordon — Alrick Man

New York 36, N. Y. 49 W. 45th St. Plaza 7-2370
Cable: "Lockmin"

CHICAGO 3, ILL.: H. K. Vinton
Room 1020, 79 W. Monroe St. CEntral 6-2784

PITTSBURGH 11, PA.: H. L. Poulton
610 Pennridge Road. HEmlock 1-1671

MIAMI 38, FLA.: Hal Moore
279 N. E. 79th Street. PLaza 8-5516

Rep. by McDonald-Thompson in:

LOS ANGELES 5, CAL.: R. Teeter
3727 W. Sixth St., DUnkirk 7-5391

SAN FRANCISCO, CAL.: Cal Wood
625 Market St. YUkon 1-2245

DENVER 3, COLO.: Bob Heidersbach
620 Sherman Street. KEystone 4-4669

PORTLAND 4, ORE.: Fred Goetz
404 Times Bldg. CA 2-5146

DALLAS 19, TEXAS: Parker Harris
2727 Oak Lawn Ave., LAkeside 7-1324

HOUSTON 6, TEXAS: F. Vickrey
Room 214, 3217 Montrose Blvd. JAckson 9-6711

SEATTLE 4, WASH.: H. Abney
1008 Western Ave. MA 3-3766

Frederick B. Grosse, Production Mgr.
New York 36, N. Y. 49 W. 45th St. Plaza 7-2370
Cable: "Lockmin"

Foreign Representatives

EUROPE except U.K. & Germany
John Ashcraft
67 Avenue des Champs Elysees, Paris, 8.

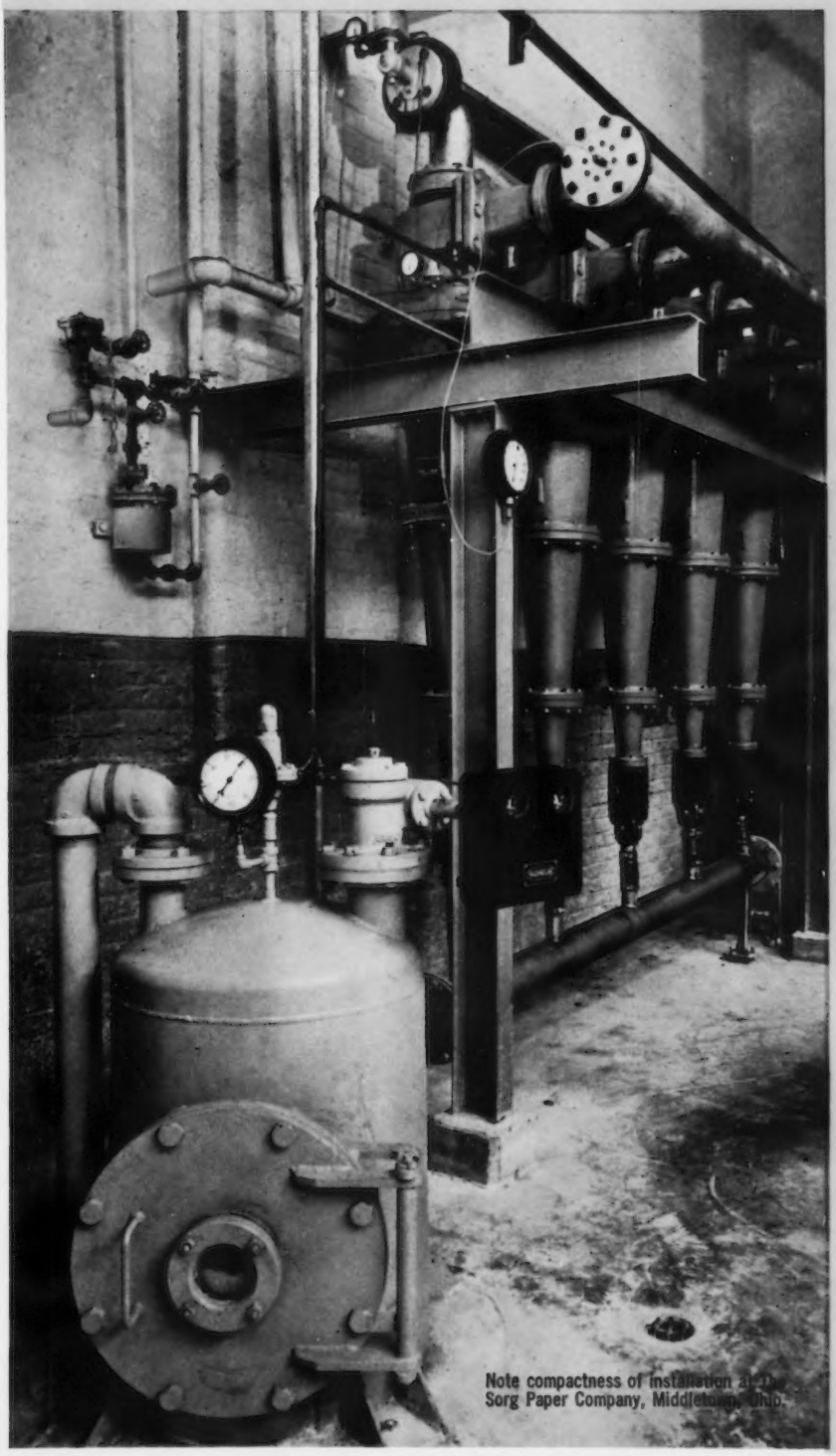
GERMANY
Herbert Morgenbasser
Kohlgarten, 3, Hamburg-FU. Phone 59-82-83

TOKYO, JAPAN
George C. Olcott, Business Manager,
International Media Representatives Ltd.,
Shadan Hojin, 14.2—Chome Marunouchi

UNITED KINGDOM
Jonn Eckford-Prossor, Agent,
Stafford House. Norfolk St., Strand, London, W.C.2
Phone TEmple Bar 7397

HUGHES PRINTING CO.
EAST STROUDSBURG, PA.

Bauer **Centri-Cleaners with Vacuum Rejects System***



Note compactness of installation at The Sorg Paper Company, Middletown, Ohio.

Eliminate air problems and provide cleaner stock at same time...

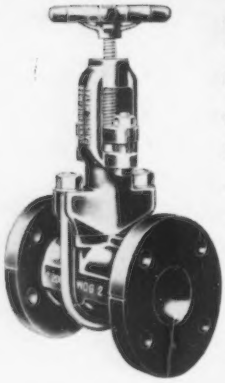
From over 100 mills using Bauer Centri-Cleaners equipped with the vacuum rejects system come reports like these:

Cleaner paper . . . improves formation on the wire, since air is kept from entering the cleaners and stock going to headbox . . . compact, neat installation . . . non-plugging . . . requires little if any maintenance . . . less wear . . . less downtime . . . eliminates need for eductors and their high pressure water system . . . reduces need for foam killers... improves quality.

If you want the best value in cleaners, get the details on this Bauer "package."

*U.S. Patents 2,878,934; 2,377,524; and 2,809,567. In Canada, 429,584; 565,199.

THE
BAUER BROS.
CO.
1712 SHERIDAN AVE.
SPRINGFIELD, OHIO



How to break the "High-Priced Valve" Habit in corrosive services

...Corrosive service once called for premium-priced valves—made entirely of stainless steel or Monel Metal. Then Lunkenheimer developed exclusive "Causul" Metal to provide "high-alloy" performance at *lower cost . . . balanced corrosion resistance* for many caustic, acid and alkaline solutions. The result has been a substantial reduction in valve costs in countless applications that formerly required premium-priced alloys. Ask your Lunkenheimer Distributor to review the corrosive problems in *your* plant. Or write the Lunkenheimer Company, Cincinnati 14, Ohio. **You can't find the cost of a valve on a price list.**

- **BRONZE**
- **IRON**
- **STEEL**
- **PVC**

LUNKENHEIMER QUALITY

LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES

L-260-13

A
I